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PART II

FEDERAL ENERGY ADMINISTRATION

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ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

Intent to Issue Prohibition Orders to Certain Powerplants

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Intention To Issue Prohibition Orders to Certain Powerplants

The Federal Energy Administration (FEA) hereby gives notice of its intention to issue Prohibition Orders, pursuant to the authorities granted it by section 2 (a) and (b) of the Energy Supply and Environmental Coordination Act of 1974, as amended (ESECA), and Chapter 10, Code of Federal Regulations (10 CFR), Parts 303 and 305 to the following powerplants:

Docket No.	Owner	Generating station	Unit No.	Location
OFU-075	New England Electric System/New England Power Co.	Brayton Point	1	Somerset, Mass.
OFU-076	do	do	2	Do.
OFU-077	do	do	3	Do.
OFU-078	do	Salem Harbor	1	Salem, Mass.
OFU-079	do	do	2	Do.
OFU-080	do	do	3	Do.
OFU-084	Eastern Utilities Associates/Montaup Electric Co.	Somerset	8	Somerset, Mass.
OFU-085	Northeast Utilities/Holyoke Water Power Co.	Mount Tom	1	Holyoke, Mass.
OFU-092	Northeast Utilities/Hartford Electric Light Co.	Middletown	1	Middletown, Conn.
OFU-093	do	do	2	Do.
OFU-094	do	do	3	Do.
OFU-095	Northeast Utilities/Connecticut Light & Power Co.	Norwalk Harbor	1	Norwalk, Conn.
OFU-096	do	do	2	Do.
OFU-099	United Illuminating Co.	Bridgeport Harbor	1	Bridgeport, Conn.
OFU-100	do	do	2	Do.
OFU-101	do	do	3	Do.

FEA hereby also gives notice of the opportunity for oral and written presentation of data, views, and arguments by interested persons regarding these proposed Prohibition Orders.

The proposed orders would prohibit the above-named powerplants from burning natural gas or petroleum products as their primary energy source.

Prior to issuance of a Prohibition Order to a powerplant, section 2(a) of ESECA and 10 CFR 303.36(b) and 305.3 (b) require that FEA find that the powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974. A Prohibition Order may not be issued unless FEA can find that the prohibition of the utilization of natural gas or petroleum products as a primary energy source is practicable and consistent with the purposes of ESECA, that coal and coal transportation facilities will be available during the period the Prohibition Order will be in effect, and that the prohibition will not impair the reliability of service in the area served by the powerplant. FEA's proposed findings, as well as its proposed conclusions and rationale with respect to these findings, for each powerplant are set out in the Appendix to this notice. These findings, conclusions and rationale may be amended as a result of comments received by FEA pursuant to this notice and other information available to FEA. The findings, conclusions and rationale will be included, with any amendments, for each Prohibition Order that is issued.

Upon completion of the proceedings described in this notice, FEA may determine to issue Prohibition Orders to some or all of the above-named powerplants. These Prohibition Orders will not become effective, however, until (1) either (a) the Administrator of the Environmental Protection Agency (EPA) notifies the FEA, in accordance with Section 119(d)(1)(B) of the Clean Air Act, that the powerplant is able to burn coal and to comply with all applicable air pollution control requirements without a compliance date extension under Section 119 (c) of such Act, or (b) if such notification is not given by EPA, the date that the Administrator of EPA certifies, pursuant to Section 119(d)(1)(B) of the Clean Air Act, is the earliest date that the powerplant will be able to comply with all applicable air pollution control requirements of Section 119 of that Act, and (2) FEA has considered the environmental impact of the order, pursuant to 10 CFR 208.3(a)(4) and 305.9, and has served the affected powerplant with a Notice of Effectiveness, as provided in 10 CFR 303.10(b), 303.37(b) and 305.7. The date the Prohibition Order will be effective will be stated in the Notice of Effectiveness.

10 CFR 305.9 requires that, prior to issuance of a Notice of Effectiveness to a powerplant, FEA shall perform an analysis of the environmental impact of the issuance of such Notice of Effectiveness. That analysis shall result in either (1) issuance of a declaration that the Prohibition Order will not, if made effective by issuance of a Notice of Effectiveness, be likely to have a significant impact on the quality of the human environment, or (2) the preparation by FEA of an environmental impact statement covering significant site-specific impacts that are likely to result from the Prohibition Order and that have not been adequately addressed in the Final Environmental Statement (FES 75-1, dated April 25, 1975) or in other official documents made publicly available. If FEA prepares an environmental impact statement covering significant site-specific impacts resulting from a Prohibition Order, the statement shall be prepared and published for comment in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969 prior to issuance of a Notice of Effectiveness. Interested persons may request a public hearing pursuant to 10 CFR 303.173 to comment on the contents of a draft environmental impact statement. With respect to comments regarding any impact on air quality that might result from a proposed Prohibition Order, however, it should be recognized that ESECA has assigned to EPA the primary responsibility for analyzing the effect of any such order on the Nation's air quality and for determining the applicable air pollution control requirements that apply to the powerplant that has been issued an order. It is expected that, in almost every case, a powerplant to which a Prohibition Order is issued will be eligible to apply to EPA for a compliance date extension. In connection with that application, EPA must also provide an opportunity for written comment and oral presentation of data, views, and arguments by interested persons. Enclosed with the Notice of Effectiveness may be a compliance reporting schedule to insure that the powerplant will be able to comply with the prohibition of the burning of natural gas or petroleum products as a primary energy source on the effective date specified in the Notice of Effectiveness.

Public comment on the proposals to issue Prohibition Orders to the powerplants listed above is invited in the form of written and oral presentation of data, views, and arguments. Comments should relate to individual docket numbers and should make clear to which docket number the individual comment is addressed.

Comments should address (1) the adequacy and validity of each of the proposed findings and the conclusions and rationale in support of these findings, (2) the environmental impact of the issuance of a Prohibition Order, including any site-specific environmental impacts, and (3) any other aspects or impacts of the proposed Prohibition Order believed to be relevant.

Pursuant to 10 CFR 303.173 (c) and (d), FEA hereby announces that a public hearing to receive oral presentation of data, views, and arguments of interested persons in the proposed Prohibition Orders will be held beginning at 9:00 a.m. on May 10-12, 1977, at the Park Plaza Hotel, Room 436, Park Square, Boston, Massachusetts 02142. Any person who has an interest in the subject of the hearing or who is a representative of a group or class of persons which has an interest in the subject of the hearing may make a written request, or a verbal request if confirmed in writing, for an opportunity to make an oral presentation. That request should be directed to Richard Meister, FEA Region 1, 150 Causeway Street, Boston, Massachusetts 02114, 617-223-3701. The request should be received before 4:30 p.m., Tuesday, May 3, 1977. The request should describe the person's interest in the issue(s) involved; if appropriate, it should state why the person is an appropriate representative of the group or class of persons which has such an interest; it

should give a concise summary of the proposed oral presentation and a phone number where the person may be contacted through May 9, 1977. Speakers will be contacted by an FEA representative before 4:30 p.m., Thursday, May 5, 1977, and should submit ten (10) copies of their oral presentation if possible, unless such presentation is less than five (5) pages, in which case only one copy is required, to Robert Mitchell, Regional Administrator, Federal Energy Administration, 150 Causeway Street, Room 700, Boston, Massachusetts 02114, before 4:30 p.m., Monday, May 9, 1977.

Detailed technical data, views, and arguments should be contained in a written submission in support of the oral presentation. The oral presentation itself should be a summary of those written comments.

While FEA will endeavor to provide adequate opportunity to all who desire to speak, FEA reserves the right to limit the number of persons to be heard at the hearing, to schedule their respective presentations and to establish the procedures governing the conduct of the hearing. The length of time allocated to each presentation may be limited on the basis of the number of persons requesting to be heard. The FEA will prepare an agenda that shall provide, to the extent possible, for the presentation of all relevant data, views, and arguments.

An FEA official will be designated to preside at the hearing which will not be a judicial or evidentiary hearing. During oral presentations only those conducting the hearing may ask questions. There will be no cross-examination. At the conclusion of all initial oral presentations, each person who has made an oral statement will be given the opportunity, if he or she so desires, to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made and will be subject to time limitations.

Any interested person may submit written questions to the presiding officer to be asked of any person making an oral presentation. The presiding officer will determine whether to ask the questions, having first determined whether the question is relevant, and whether adequate time may be afforded for an answer.

Any further procedural rules needed for the proper conduct of the hearing will be announced by the presiding officer.

A transcript of the hearing will be made and it, together with any written comments submitted in the course of the hearing, will be retained by the FEA and made available for inspection and copying at the public reading room located in Room 2107, Federal Building, 12th and Pennsylvania Avenue NW., Washington, D.C. 20461, and the FEA Regional Office, Library, 7th Floor, 150 Causeway Street, Boston, Massachusetts 02114, between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday. Anyone may purchase a copy of the transcript from the reporter.

Interested persons are invited to submit written comments consisting of data, views, and arguments with respect to these proposed Prohibition Orders to Executive Communication, Box MC, Federal Energy Administration, Federal Building, Room 3309, 12th and Pennsylvania Avenue NW., Washington, D.C. 20461.

Comments and other documents submitted to FEA Executive Communications should be identified on the outside of the envelope in which they are transmitted and on the document itself with the designation "Proposed Prohibition Order for the ---------- Powerplant." Fifteen copies should be submitted.

All written comments received by 4:30 p.m., Monday, May 30, 1977, all oral presentations, and all other relevant information submitted to or available to FEA will be considered by FEA prior to issuance of a Prohibition Order.

Any information or data considered to be confidential by the person furnishing it must be so identified and submitted in writing, one copy only. The FEA reserves the right to determine the confidential status of the information or data and to treat it in accordance with that determination.

Copies of the regulations implementing Section 2 (a) and (b) of ESCEA (10 CFR Parts 303 and 305) are available from the following FEA Regional Offices:

REGION, ADDRESS, AND PHONE

I—Robert Mitchell, Regional Administrator, 150 Causeway Street, Room 700, Boston, Massachusetts 02113, 617-223-3701.

II—Alfred Kleinfeld, Regional Administrator, 26 Federal Plaza, Room 3206, New York, New York 10007, 212-264-1021.

III—J. A. LaSala, Regional Administrator, 1421 Cherry Street, Room 1001, Philadelphia, Pennsylvania 19102, 215-597-3390.

IV—Donald Allen, Regional Administrator, 1655 Peachtree Street NE.—8th Floor, Atlanta, Georgia 30309, 404-526-2837.

V—N. Allen Anderson, Regional Administrator, Federal Office Building, 175 West Jackson Blvd., Room A-333, Chicago, Illinois 60604, 312-353-0540.

VI—Delbert Fowler, Regional Administrator, Post Office Box 35228, 2626 West Mockingbird Lane, Dallas, Texas 75235, 214-749-7345.

VII—Neil Adams, Regional Administrator, 1150 Grand Avenue, Kansas City, Missouri 64106, 816-374-2061.

VIII—Dudley Faver, Regional Administrator, Post Office Box 26247, Belmar Branch, 1075 South Yukon Street, Lakewood, Colorado 80226, 303-234-2420.

IX—William Arntz, Regional Administrator, 111 Pine Street, San Francisco, California 94111, 415-556-7216.

X—Jack B. Robertson, Regional Administrator, 1992 Federal Building, 915 Second Avenue, Seattle, Washington 98174, 206-442-7280.

Any questions regarding this notice should be directed to the FEA National Office as follows: Federal Energy Administration, Code OCU (Prohibition Order: ---------- Powerplant), Washington, D.C. 20461, 202-566-7941.

(Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 791 et seq.), as amended by Pub. L. 94-163; Federal Energy Administration Act of 1974 (15 U.S.C. 761 et seq.), as amended by Pub. L. 94-385; E.O. 11790 (39 FR 23185).)

Issued in Washington, D.C., April 25, 1977.

ERIC J. FYGI,
Acting General Counsel,
Federal Energy Administration.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-075 OFU-076 OFU-077	New England Electric System/New England Power Co.	Brayton Point.....	1 2 3	Somerset, Mass.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

New England Electric Power Company, a wholly owned subsidiary of New England Electric System shall be referred to as the "utility" and as "NEPCO".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Number 1, 2 and 3 at Brayton Point Generating Station (Brayton Point 1, 2 and 3) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. New England Electric System, in information filed with FEA dated April 11, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information New England Electric System filed with FEA dated April 11, 1975, and other information available to FEA, the following plant equipment or facilities at Brayton Point 1, 2 and 3 would have to be acquired or refurbished in order for these powerplants to burn coal as their primary energy source:

1. Coal handling equipment.
2. Pulverizers, burners and boilers.
3. Ash handling equipment.

C. FEA proposes to find that on June 22, 1974, Brayton Point 1, 2 and 3 had all other

significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Brayton Point 1, 2 and 3 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Brayton Point 1, 2 and 3 will be operated at a 72 percent capacity factor (this represents a weighted average of each powerplant's projected capacity factor), have a remaining useful life of 26 years (as of the date of this NOI), are expected to have at least 20 years remaining useful life after conversion of the powerplants, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Brayton Point 1, 2 and 3 are estimated to be approximately $76,275,000, which assumes that electrostatic precipitators will be required at a cost of $44,144,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc., report entitled Evaluation of The Coal Conversion Potential For The Brayton Point Plant, March 29, 1977 (hereafter "PEDCo Report".)

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $12,365,000 per year including $8,870,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by Platt's Oilgram Price Service, January 11, 1977, the price of petroleum products available to Brayton Point 1, 2 and 3 is approximately $2.16 per million BTU's for oil. This represents $13.39 per barrel of oil, assuming 6.2 million BTU's per barrel.

(ii) Based on information supplied by NUS Corporation and the Center for Energy Policy, Inc., the price of coal available to Brayton Point 1, 2 and 3 is approximately $1.37 per million BTU's. This represents $35.07 per ton of coal, assuming 25.6 million BTU's per ton.

(iii) FEA estimates that the burning of coal by these powerplants will result in the reduction of approximately $0.79 per million BTU's, or $52,361,000 per year in fuel costs. This estimate is based on fuel consumption presuming Brayton Point 1, 2 and 3 are operated at a weighted average 72 percent capacity factor and with an average heat rate of 9,045 BTU's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Brayton Point 1, 2 and 3, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $29,040,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Brayton Point 1, 2 and 3 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $16,675,000 (this represents amortized cost over the 20 years remaining useful life of these powerplants after conversion, and it is based on a fixed charge rate of $21.95 of the total initial capital investment of $76,275,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $12,365,000 (these figures are derived from the figures in paragraphs A.1. a., and b.), but will experience an annual fuel cost savings of approximately $52,361,000. (See paragraph A.1.c.) Considering the fuel cost savings, the total annual cost of operating Brayton Point 1, 2 and 3 should be reduced by $23,321,000.

Since all increased costs of conversion will be offset by the decrease in fuel costs, it is estimated that there will be an overall net decrease in the cost of producing electricity at Brayton Point 1, 2 and 3. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Brayton Point 1, 2 and 3 will result in an estimated annual equivalent savings of 10,690,000 barrels of oil that otherwise would be used in providing steam for electric power generation.

FEA proposes to find that, since the increased annual capital investment costs and operating and maintenance costs at the powerplants are offset by the current fuel cost differential between oil and coal burning at these powerplants, and potential future increases in the fuel cost differential in favor of coal, the additional costs associated with burning coal are reasonable.

3. *Financial capabilities of New England Electric System.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Brayton Point 1, 2 and 3 would be economically feasible. FEA's analysis took into consideration $116,272,000 additional capital investment costs required for New England Electric System to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to New England Electric System powerplants. FEA related these additional capital investment costs to New England Electric System's estimate of its 1977–79 construction budget of $769 million, the total capitalization of New England Electric System of $1.4 billion, and the 20 years remaining useful life after conversion of Brayton Point 1, 2 and 3.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financing relationship which exists between New England Electric System and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $42,540,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiaries of New England Electric Systems. (FEA also took into consideration revenue requirements of the subsidiaries of New England Electric Systems resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to New England Electric Systems powerplants.) This estimate of $42,540,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled "Computer Methodology For Coal Conversion Cost Reasonableness Determination," August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled "Identfication Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal," October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $40,129,000, which assumed a predicted effect on New England Systems' financial statement and represents revenue required to offset any potential loss in New England Electric Systems' net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $42,540,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting aggregate value of fuel cost savings of approximately $62,383,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiaries of New England Electric Systems should decrease by approximately $19,843,000.

4. *Consumer impact.* New England Power Company, a wholly-owned subsidiary of New England Electric System, is the owner and operator of the Brayton Point Generating Station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Brayton Point 1, 2 and 3.

The potential initial impact of a Prohibition Order to Brayton Point 1, 2 and 3, is a net decrease in revenues required from NEPCO consumers of approximately $0.0015 per kilowatt hour of electricity sold by NEPCO. This estimate is based on FEA's analysis of the Ultrasystems Computer Model.

The actual amount of the decrease will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which New England Electric System selects to finance the increased costs associated with burning coal as a primary energy source at Brayton Point 1, 2 and 3, the extent to which the cost decrease is spread among NEPCO customers, the regulations or policies of the regulatory agencies with jurisdiction over NEPCO regarding inclusion of such cost decreases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Brayton Point 1, 2 and 3 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA pro-

poses to conclude that a Prohibition Order to Brayton Point 1, 2 and 3 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) (hereafter "BOM Survey")). Within these recoverable reserves approximately 200 billion tons contain 1% or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total national coal planned production for 1985 already meets over 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	782.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's "Coal Mine Expansion Study" (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, "Availability of Potential Coal Supply Through 1985 by Quality Characteristics," August 1976 (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*Production (million tons)*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976 (hereafter "Coal Conversion Study")):

Year:	*Demand (million tons)*
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8
1985	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality charactertistics available for use at these power plants. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that pulverized-coal dry bottom boilers, of the type used at Brayton Point 1, 2 and 3, will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

	Units 1 and 2	Unit 3
Btu's per pound	12,100 minimum	12,500 minimum.
Moisture	15 percent maximum	15 percent maximum.
Ash	20 percent maximum	20 percent maximum.
Volatile	15 percent minimum	15 percent minimum.
Ash softening (temperature)	2,200 (°F) minimum	2,200 (°F) minimum.
Sulfur	0.8 percent (approximate)	0.8 percent (approximate).

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	*Demand (thousand tons)*
1982 and thereafter	2,589

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Brayton Point 1, 2 and 3 in a nationwide market as follows:

Year:	*Production (thousand tons)*
1977	8,072
1978	14,799
1979	27,186
1980	30,120
1981	35,075
1982	36,966
1983	39,440
1984	46,768

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of charactertistic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outsanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above is:

Year:	*Demand (thousand tons)*
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Brayton Point 1, 2 and 3 (in a probable regional supply/demand relationship related to the location of these powerplants) from Bureau of Mines Districts 1 through 8, and 13 as follows:

Year:	*Production (thousand tons)*
1977	7,727
1978	13,920
1979	25,369
1980	28,022
1981	32,547
1982	34,294
1983	36,578
1984	43,250

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines Districts 1 through 8 and 13 expected to result from this NOI, from all other No-

tices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons)*
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand for coal from BOM Districts 1 and 8 through 13 with a 0.61–1.0 percent sulfur content (which includes the 0.8 percent maximum sulfur content described in paragraph A.3.a. above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons) percent sulfur 0.61 to 1.0*
1977	1,247
1978	2,767
1979	3,854
1980	7,100
1981	8,172
1982	12,331
1983	12,331
1984	12,331

The regional planned production of coal as stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Brayton Point 1, 2 and 3 as described in paragraph A.3.a. above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for these powerplants will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplants and coal supply.* Based on an FEA study, "Utility Analysis of Coal Transportation Availability," November 1976, (hereafter "Transportation Availability Study"), coal for Brayton Point 1, 2 and 3 would probably come from Bureau of Mines (BOM) District 8 for both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipmen.* A primary route for coal delivery for Brayton Point 1, 2 and 3 would originate on the Norfolk & Western (N&W) railroad which can carry the coal to Norfolk, Virginia. Ocean barges towed by Express Marine or Red Star Towing and Transportation could transport the coal from N&W's Lambert's Point Piers 5 or 6 to the plant. The total rail distance is approximately 400 miles, with a sea leg of about 500 miles.

One alternate route from BOM District 8 would involve originating coal on the N&W to Hagerstown, Maryland, and taking it from there through New York and Providence, Rhode Island, to Brayton Point on Consolidated Railroad Corporation (Con-Rail).

The primary route from the alternate source of supply also would be to originate coal from BOM District 8 on the N&W to Norfolk and barge the coal via the ocean to the plant.

3. *Originating trunk carrier.* The N&W, the expected originating carrier of coal for Brayton Point 1, 2 and 3 has approximately 54,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the N&W may need as many as 1500 additional cars to handle the increased demand from Brayton Point 1, 2 and 3. This estimate assumes that the railroad would neither have excess originating capacity nor use cars from other carriers in the originating vicinity.

Only about 2 percent of the hopper fleet is in heavy bad order and retirement rates through 1985 are expected to average approximately 1,200 cars/year. The N&W indicated that it is willing to acquire any needed capacity involved in shipment to Brayton Point 1, 2 and 3 and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the powerplants prepare to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The N&W indicated that transportation facilities at those mine sites within BOM District 8 served by the N&W are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Coal can be barged to Brayton Point 1, 2 and 3 from the N&W Lambert's Point piers in Norfolk, Virginia by Red Star or by Express Marine. Coal would be shipped in ocean-going barges, which can be accommodated by the docking facilities at these powerplants. According to Express Marine, such barges (23,000 ton ocean going) are not presently available, but could be borrowed from the Gulf of Mexico area or constructed given a 2 to 3 year lead time and a long term barging commitment.

New England Electric Systems indicated that coal unloading facility improvements and refurbishments are necessary.

It is expected that these repairs can be accomplished prior to the expected date for coal burning. There are no other obstacles to delivery of coal to Brayton Point 1, 2 and 3.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Brayton Point 1, 2 and 3 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Brayton Point 1, 2 and 3 will not impair the reliability of service in the area served by these powerplants. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.*

1. The Brayton Point Station is owned by NEPCO, which is owned by New England Electric System, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council (NPCC) regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Brayton Point 1, 2 and 3 may implement a Prohibition Order will result in the gross capacities indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
Millstone Point 3	Nuclear	Add	+1,150	May 1982.
Pilgrim 2	do	Add	+1,180	October 1982.
Stony Brook 2	Oil	Add	+120	November 1982.

Totals:	*Added*
Mar. 1 to Apr. 30, 1982	+2,11
July 1 to Aug. 31, 1982	+3,265
Sept. 1 to Oct. 31, 1982	+4,445
Nov. 1 to Dec. 31, 1982	+4,565

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dattd October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Brayton Point 1, 2 and 3. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently beginning considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Brayton 1, 2 and 3 would implement a Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Brayton Point 1, 2 and 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of Brayton Point 1, 2 and 3 would be approximately 261 MW for 1 or 2 and 640 MW for 3 (line 7, attachment 1). The potential loss of capacity from a combined outage of Brayton Point 1, 2 and 3 would be approximately 1,162 MW. This represents the maximum potential loss due to outages at these powerplants, but it is expected that Brayton Point 1, 2 and 3 will be implementing a Prohibition Order at different times. This maximum potential loss of 1,162 MW is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion period specified on attachments 1 and 2 is shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8, attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be marginally acceptable reserve margins taking into consideration the geographical location of Brayton Point 1, 2 and 3.

5. At the completion of the conversion there will be a net 5.14 MW derating of Brayton Point 1, 2 and 3 as a result of using coal as their primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Brayton Point 1, 2 and 3, are as presently forecast during the time required to implement a Prohibition Order by Brayton Point 1, 2 and 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by NEPCO or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data; Brayton point

		Assumed conversion periods (megawatt capacity)			
		1982, Mar. 1–Apr. 30	1982, July 1–Aug. 31	1982, Sept. 1–Oct. 31	1982, Nov. 1–Dec. 31
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841	20,841	20,841	20,84
2	Added capacity	2,115	3,265	4,445	4,56
3	Cross capacity	22,956	24,106	25,286	25,406
4	Scheduled outages for maintenance	2,101	687	3,603	1,310
5	Projected outages due to prohibition orders	915	925	1,598	803
6	Maximum projected outages due to maintenance and prohibition orders (lines 4 and 5)	3,016	1,612	5,201	2,113
7	Unit outage	261	261	640	640
8	Peak load	15,684	18,533	17,162	20,192
9	Net dependable capacity	19,940	22,494	20,085	23,293
10	Reserve capacity	4,256	3,961	2,923	3,101
11	Reserve margin percent (maintenance and prohibition orders)	27.14	21.37	17.03	15.36
12	Reserve margin percent (maintenance only)	32.97	26.36	26.34	19.33

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast utilities	Mount Tom	1	March to April 1982.
Do	Middletown	1	March to April 1982.
Do	do	2	May to June 1982.
Do	do	3	July to September 1982.
Do	Norwalk Harbor	1	March to August 1982.
Do	do	2	September to February 1983.
The United Illuminating Co	Bridgeport Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	October to November 1982.
Do	Salem Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplant named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-084	Eastern Utilities Associates/Montaup Electric Co.	Somerset	8	Somerset, Mass.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

Montaup Electric Company, a wholly owned subsidiary of Eastern Utilities Associates, shall be referred to as the "utility" and as "Montaup."

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 8 at Somerset Generating Station (Somerset 8) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Montaup, in information filed with FEA dated April 10, 1975, indicated that the powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information Montaup filed with FEA dated April 10, 1975, and other information available to FEA, the following plant equipment or facilities at Somerset 8 would have to be acquired or refurbished in order for this powerplant to burn coal as its primary energy source:

1. Yard work.
2. Chimney and ductwork.
3. Waste treatment system.

C. FEA proposes to find that on June 22, 1974, Somerset 8 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Somerset 8 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Somerset 8 will be operated at a 42 percent capacity factor, has a remaining useful life of 18 years (as of the date of this NOI), is expected to have at least 13 years remaining useful life after conversion of the powerplant, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*— 1. *Costs associated with burning coal.* a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Somerset 8 are estimated to be approximately $6,993,000 which assumes that an electrostatic precipitator will be required at a cost of $5,914,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled "Evaluation Of The Coal Conversion Potential For The Somerset Plant," March 23, 1977 (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $1,969,000 per year including $1,226,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PTDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by Montaup, the price of petroleum products available to Somerset 8 is approximately $2.18 per million BTU's for oil. This represents $13.49 per barrel of oil, assuming 6.19 million BTU's per barrel.

(ii) Based on information supplied by NUS Corporation, the price of coal available to Somerset 8 is approximately $1.37 per million BTU's. This represents $35.07 per ton of coal, assuming 25.6 million BTU's per ton.

(iii) FEA estimates that the burning of coal by this powerplant will result in the reduction of approximately $0.81 per million BTU's or $3,916,000 per year in fuel costs. This estimate is based on fuel consumption presuming Somerset 8 is operated at a 42 percent capacity factor and with an average heat rate of 10,700 BTU's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Somerset 8, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $3,647,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Somerset 8 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $1,678,000 (this represents an amortized cost over the 13 years remaining useful life of the powerplant after conversion, and is based on a fixed charge rate of 24.0% of the total initial capital investment of $6,993,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $1,969,000 (these figures are derived from the figures in paragraph A.1. a. and b.), but will experience an annual fuel cost savings of approximately $3,918,000. (See paragraph A.1.c.) Considering the fuel cost savings, the total annual cost of operating Somerset 8 should be reduced by $271,000.

Since all increased costs of conversion will be offset by the decrease in fuel costs, it is estimated that there will be an overall net decrease in the cost of producing electricity at Somerset 8. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Somerset 8 will result in an estimated annual equivalent savings of 782,000 barrels of oil that otherwise would be used in providing steam for electric power generation.

FEA proposes to find that, since the increased annual capital investment costs and operating and maintenance costs at the powerplant are offset by the current fuel cost differential between oil and coal burning at this powerplant, and potential future increases in the fuel cost differential in favor of coal, the additional costs associated with burning coal are reasonable.

3. *Financial capabilities of Eastern Utilities Associates.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Somerset 8 would be economically feasible. FEA's analysis took into consideration the $6,993,000 additional capital investment required for Eastern Utilities Associates to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Eastern Utilities Associates powerplants. FEA related these additional capital investment costs to the utility's estimate of its 1977–79 construction budget of $61.9 million, the total capitalization of Eastern Utilities Associates of $165 million, and the 13 years remaining useful life after conversion of Somerset 8.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financing relationship which exists between Eastern Utilities Associates and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $3,647,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiary (Montaup) of Eastern Utilities Associates. (FEA also took into consideration revenue requirements of the subsidiaries of Eastern Utilities Associates resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Eastern Utilities Associates powerplants.) This estimate of $3,647,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $3,682,000, which assumed a predicted effect on Eastern Utilities Associates' financial statement and represents revenues required to offset any potential loss in Eastern Utilities Associates' net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $3,647,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting value of fuel cost savings of approximately $3,918,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiary of Eastern Utilities Associates (Montaup) should decrease by approximately $271,000.

4. *Consumer Impact.* Montaup, a wholly-owned subsidiary of Eastern Utilities Associates, is the owner and operator of the Somerset Generating Station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Somerset 8.

The potential initial impact of a Prohibition Order to Somerset 8 is a net decrease in revenues required from Montaup consumers of approximately $0.000075 per kilowatt hour of electricity sold by Montaup. This estimate is based on FEA's analysis of the Ultrasystems Computer Model. The actual amount of the decrease will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which Eastern Utilities Associates selects to finance the increased costs associated with burning coal as a primary energy

source at Somerset 8, the extent to which the cost decrease is spread among Montaup customers, the regulations or policies of the regulatory agencies with jurisdiction over Montaup regarding inclusion of such cost decreases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Somerset 8 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Somerset 8 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation will be available to this powerplant during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) (hereafter "BOM Survey")). Within these recoverable reserves approximately 200 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985, already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*(million tons) Production*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA of prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (*FEA 1976 National Energy Outlook*):

Year:	*(million tons) Demand*
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976, (hereafter "Coal Conversion Study")):

Year:	*Demand (million tons)*
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8
1985	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Somerset 8. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal dry bottom boiler, of the type used at Somerset 8, will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's/lb.	[1] 12,500
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[1] 15
Ash softening (temp.) (°F)	[1] 2,200
Sulfur (approx.) (percent)	[2] 0.8

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from this powerplant.* The potential demand for coal, of the type described above, which would result from this NOI is established to be as follows:

Year:	*Demand (thousand tons)*
1982 and thereafter	189

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Somerset 8 in a nationwide market as follows:

Year:	*Production (thousand tons)*
1977	8,072
1978	14,799
1979	27,186
1980	30,120
1981	35,075
1982	36,966
1983	39,440
1984	46,768

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	*Demand (thousand tons)*
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Somerset 8 (in a probable regional supply/demand relationship related to the location of this powerplant) from Bureau of Mines Dinstricts 1 through 8 and 13 as follows:

Year:	*Production (thousand tons)*
1977	7,727
1978	13,920
1979	25,860
1980	28,022
1981	32,547
1982	34,294
1983	36,578
1984	43,250

f. Regional ESECA prohibition order demand for coal, regardless of characteristic. The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines Districts 1 through 8 and 13 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons)*
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. Regional ESECA prohibition order demand for coal by sulfur characteristic. The potential regional demand within BOM Districts 1 through 8 and 13 for coal with a 0.61–1.0% sulfur content (which includes the 0.8% maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons) percent sulfur 0.61 to 1.0*
1977	1,247
1978	2,767
1979	3,854
1980	7,100
1981	8,172
1982	12,331
1983	12,331
1984	12,331

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no State or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Somerset 8 as described in paragraph A.3.a. above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Somerset 8 will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that the powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal Transportation.*—1. *Location of powerplant and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study") coal for Somerset 8 would probably come from Bureau of Mines (BOM) District 8 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to the powerplant, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Routes of coal shipment.* A primary route for coal delivery for Somerset 8 would originate on the Norfolk & Western (NW) Railroad which can carry the coal to Norfolk, Virginia. Ocean barges towed by Express Marine on Red Star Towing and Transportation could transport the coal from N&W Lambert's Point Piers 5 or 6 to the powerplant. The total rail distance is approximately 400 miles, with a sea leg of about 500 miles.

One alternate route from BOM District 8 would involve originating coal on the N&W to Hagerstown, Maryland, and taking it on Conrail through New York City and Providence, Rhode Island, to Somerset, Massachusetts.

Another alternate route from the alternate supply area would originate coal from BOM District 8 (West Virginia) to Norfolk, Virginia, on N&W and transport the coal by ocean barge to the plant.

3. *Originating trunk carrier.* The N&W, the expected originating carrier of coal for Somerset 8 has approximately 54,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the N&W may need as many as 110 additional cars to handle the increased demand from Somerset 8. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

Only about 2 percent of the hopper fleet is in heavy bad order and retirement rates through 1985 are expected to average approximately 1,200 cars/year.

The N&W indicated that it is willing to acquire any needed capacity involved in shipment to Somerset 8 and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utility prepares to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under Section 2(a) of ESECA.

The N&W indicated that transportation facilities at those mine sites within BOM District 8 served by the N&W are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Coal for Somerset 8 would be brought by ocean-going barge from the N&W Lambert's Point piers in Norfolk, Virginia. Express Marine and Red Star Towing and Transportation have expressed willingness to transport the coal to the powerplant. Existing barge capacity would be available from the Gulf of Mexico area; however, new barges may have to be built. Given sufficient lead time (2 to 3 years) and a long-term coal shipping commitment, the barge companies would be willing to have the necessary equipment constructed.

The 26-foot depth of the channel at the powerplant is sufficient to allow delivery by ocean-going barges. Somerset 8 has two coal unloading towers which are in good condition and, when taken together, are capable of unloading 500 tons of coal per hour.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Somerset 8 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Somerset 8 will not impair the reliability of service in the area served by the powerplant. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.*

1. The Somerset Generating Station is owned by Montaup, which is owned by Eastern Utilities Associates, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed findings means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Somerset 8 may implement a Prohibition Order will result in the gross capacity indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
				Added
Total: Mar. 1 to Apr. 30 period				+2,115

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E-2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Somerset 8. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Somerset 8 would implement the Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Somerset 8 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for the powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplant may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, this projected outage is most likely to occur during the year 1982. The potential loss of capacity from an outage of Somerset 8 would be approximately 122 MW, (line 7, attachment 1), which is included in the total outages indicated on line 6 in attachment 1. (This assumed conversion period specified on attachments 1 and 2 is shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system, include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparison of this net dependable capacity to the forecast peak load shown on line 8, attachment 1 indicates that the reserve capacity shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of this reserve capacity to the forecast peak load shown on line 8 of attachment 1 results in a reserve margin as indicated on line 11 of attachment 1 (as contrasted with a reserve margin as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers this to be an acceptable reserve margin taking into consideration the geographical location of Somerset 8.

5. At the completion of the conversion there will be a net 0.6 MW derating of Somerset 8 as a result of using coal as its primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Somerset 8 are as presently forecast during the time required to implement a Prohibition Order by Somerset 8, there will be no impairment of reliability of service within the meaning of ESECA in the area served by Montaup or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data—Somerset

	Assumed conversion period Mar. 1–Apr. 30, 1982	Megawatt capacity
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841
2	Added capacity	2,115
3	Gross capacity	22,956
4	Scheduled outages for maintenance	2,101
5	Projected outages due to prohibition orders	915
6	Maximum projected outages due to maintenance and prohibition orders (line 4 and line 5)	3,016
7	Unit outage	122
8	Peak load	15,684
9	Net dependable capacity	19,940
10	Reserve capacity	4,256
11	Reserve margin percent (maintenance and prohibition orders)	27.14
12	Reserve margin percent (maintenance only)	32.97

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982
Do	Middletown	1	March to April 1982
Do	do	2	May to June 1982
Do	do	3	July to September 1982
Do	Norwalk Harbor	1	March to August 1982
Do	do	2	September to February 1983
The United Illuminating Co	Bridgeport Harbor	1	March to April 1982
Do	do	2	July to August 1982
Do	do	3	September to October 1982
Eastern Utilities Associates	Somerset	8	March to April 1982
New England Electric System	Brayton Point	1	March to April 1982
Do	do	2	July to August 1982
Do	do	3	October to November 1982
Do	Salem Harbor	1	March to April 1982
Do	do	2	July to August 1982
Do	do	3	September to October 1982

Appendix

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-078 OFU-079 OFU-080	New England Electric System/New England Power Co.	Salem Harbor	1 2 3	Salem, Mass.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

New England Power Company, a wholly-owned subsidiary of New England Electric System shall be referred to as the "utility" and as "NEPCO".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Number 1, Number 2 and Number 3 at Salem Harbor Generating Station (Salem Harbor 1, 2 and 3) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. New England Electric System, in information filed with FEA dated April 11, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information New England Electric filed with FEA dated April 11, 1975, and other information available to FEA, the following plant equipment or facilities at Salem Harbor 1, 2 and 3 would have to be acquired or refurbished in order for these powerplants to burn coal as their primary energy source:

1. Coal handling equipment.
2. Pulverizers, burners and boilers.
3. Ash handling equipment.

C. FEA proposes to find that on June 22, 1974, Salem Harbor 1, 2 and 3 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Salem Harbor 1, 2 and 3 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Salem Harbor 1, 2 and 3 will be operated at a 49 percent capacity factor (this represents a weighted average of each powerplant's projected capacity factor), have a remaining useful life of 20 years (as of the date of this NOI), are expected to have at least 15 years remaining useful life after conversion of the powerplants, and on the facts and interpretations stated below:

A. *The burning of coal is practicable*—1. *Costs associated with burning coal.* a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Salem Harbor 1, 2, and 3 are estimated to be approximately $39,997,000 which assumes that electrostatic precipitators will be required at a cost of $19,813,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc., report entitled Evaluation Of The Coal Conversion Potential Of The Salem Harbor Generating Station, March 28, 1977 (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $3,813,000 per year including $3,301,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied in Platts Oilgram Price Service, dated January 11, 1977, the price of petroleum products available to Salem Harbor 1, 2 and 3 is approximately $2.16 per million Btu's for oil. This represents $13.41 per barrel of oil, assuming 6.2 million Btu's per barrel.

(ii) Based on information supplied by NUS Corporation and Center for Energy Policy Inc. the price of coal available to Salem Harbor 1, 2 and 3 is approximately $1.37 per million Btu's. This represents $35.07 per ton of coal, assuming 25.6 million Btu's per ton.

(iii) FEA estimates that the burning of coal by these powerplants will result in the reduction of approximately $0.79 per million Btu's, or $10,022,000 per year in fuel costs. This estimate is based on fuel consumption presuming Salem Harbor 1, 2 and 3 are operated at a weighted average 49 percent capacity factor and with an average heat rate of 9,790 Btu's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Salem Harbor 1, 2 and 3, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $13,500,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Salem Harbor 1, 2 and 3 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $9,687,000 (this represents an amortized cost over the 15 years remaining useful life of these powerplants after conversion, and is based on a fixed charge rate of 24.2% of the total initial capital investment of $39,997,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $3,813,000 (these figures are derived from the figures in paragraphs A.1. a., and b.), but will experience an annual fuel cost savings of approximately $10,022,000. (See paragraph A.1.c) The estimated net annual increase in cost of producing electricity at Salem Harbor 1, 2 and 3 after conversion will be $3,478,000.

Increased costs for conversion will be mitigated by the decrease in fuel costs. The net result, however, will be an increase in the cost of producing electricity at Salem Harbor 1, 2 and 3. The costs to the utility resulting from the Prohibition Order ultimately will be recovered in rates.

The use of coal at Salem Harbor 1, 2 and 3 will result in an estimated annual equivalent savings of 2,046,000 barrels of oil that otherwise would be used in providing steam for electric power generation. The cost of conversion per barrel of oil saved is estimated to be $1.70.

Although conversion to the burning of coal would be expected to increase the cost of producing electricity at Salem Harbor 1, 2 and 3, FEA proposes to find that such increased cost, per barrel of oil saved, is not unreasonable. This determination is based on consideration of the substantial savings of oil that will result from this conversion. The determination that the costs of converting are not unreasonable is further supported by consideration of such costs in relation to the expected 15 years remaining useful life of the powerplants after conversion, the size and resources of New England Electric System as examined in the following analysis of financial capability, the nature of the expected operations of these powerplants, and potential future increases in the fuel cost differential in favor of coal.

3. *Financial capabilities of New England Electric System.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Salem Harbor 1, 2 and 3 would be economically feasible. FEA's analysis took into consideration the $116,272,000 additional capital investment costs required for New England Electric System to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to New England Electric System powerplants. FEA related these additional capital investment costs to New England Electric System's estimate of its 1977–79 construction budget of $769 million, the total capitalization of New England Electric System of $1.4 billion, and the 15 years remaining useful life after conversion of Salem Harbor 1, 2 and 3.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financial relationship which exists between New England Electric System and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $42,540,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiaries of New England Electric Systems. (FEA also took into consideration revenue requirements of the subsidiaries of New England Electric Systems resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to New England Electric Systems powerplants.) This estimate of $42,540,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification of Possible Financial Effects of Converting Certain Electric Generating Facilities To The Use of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $40,129,000 which assumed a predicted effect on New England Electric System's financial statement and represents revenues required to offset any potential loss in New England Electric System's net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $42,540,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting aggregate value of fuel cost savings of approximately $62,383,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiaries of New England Electric Systems should decrease by approximately $19,843,000.

4. *Consumer impact.* NEPCO, a wholly-owned subsidiary of New England Electric System is the owner and operator of the Salem Harbor Generating Station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Salem Harbor 1, 2 and 3.

The potential initial impact of a Prohibition Order to Salem Harbor 1, 2 and 3 is a net increase in revenues required from NEPCO consumers of approximately $0.00065 per kilowatt hour of electricity sold by NEPCO. This estimate is based on FEA's analysis of the Ultrasystems Computer Model.

The actual amount of the increase will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which New England Electric System selects to finance the increased costs associated with burning coal as a primary energy source at Salem Harbor 1, 2 and 3, the extent to which the cost increase is spread among NEPCO customers, the regulations or policies of the regulatory agencies with jurisdiction over NEPCO regarding inclusion of such cost increases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Salem Harbor 1, 2 and 3 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the

essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Salem Harbor 1, 2 and 3 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverabe (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) (hereafter "BOM Survey")). Within these recoverable reserves approximately 200 billion tons contain 1% or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	Production potential (million tons)
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980.

The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study") indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (million tons)
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976, (hereafter "Coal Conversion Study")):

Year:	Demand (million tons)
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Salem Harbor 1, 2 and 3. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that pulverized-coal dry bottom boilers of the type used at Salem Harbor 1, 2 and 3 will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's/lb.	[1] 12,500
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[1] 15
Ash softening temp. (°F)	[1] 2,200
Sulfur (approx) (percent)	[2] 0.8

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1982 and thereafter	496

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Salem Harbor 1, 2 and 3 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	8,072
1978	14,799
1979	27,186
1980	30,120
1981	35,075
1982	36,966
1983	39,440
1984	46,768

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Salem Harbor 1, 2 and 3 (in a probable regional supply/demand relationship related to the location of these powerplants) from Bureau of Mines Districts 1 through 8 and 13 as follows:

Year:	Production (thousand tons)
1977	7,727
1978	13,920
1979	25,369
1980	28,022
1981	32,547
1982	34,294
1983	36,578
1984	43,250

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines District 1 through 8 and 13 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905

Year:	Demand (thousand tons)
1982	19,503
1983	19,503
1984	19,503

g. Regional ESECA prohibition order demand for coal sulfur characteristic. The potential regional demand within BOM Districts 1 through 8 and 13 for coal with a 0.61–1.0 percent sulphur content (which includes the 0.8 percent maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) Percent sulfur 0.61 to 1.0
1977	1,237
1978	2,767
1979	3,854
1980	7,100
1981	8,172
1982	12,331
1983	12,331
1984	12,331

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristics.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Salem Harbor 1, 2 and 3 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Salem Harbor 1, 2 and 3 will probably be bought from producers according to regional supply/demand relationships related to the powerplants' locations from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplants and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976 (hereafter "Transportation Availability Study"), coal for Salem Harbor 1, 2 and 3 would probably come from Bureau of Mines (BOM) District 8 as the primary source of supply and from District 13 as the alternate source of supply. While these supply areas are the nearest available potential sources able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Salem Harbor 1, 2 and 3 would originate on the Norfolk & Western (N&W) Railroad to Norfolk, Virginia. Ocean barges towed by Express Marine or Red Star Towing and Transportation could transport the coal from N&W's Lambert's Point Piers 5 or 6 to the plant. The total rail distance is approximately 400 miles, with a marine leg of about 650 miles.

One alternate route from BOM District 8 would involve originating coal on the N&W via Hagerstown, Maryland, taking Conrail through New York City to Boston, Massachusetts, and to Salem Harbor 1, 2 and 3 via the Boston and Maine Corporation Railroad.

Another alternate route from the alternate supply would be to originate coal from BOM District 13 to Bristol, Virginia, via Southern Railway, on to Norfolk, Virginia, via N&W, and then by ocean barge to Salem, Massachusetts.

3. *Originating trunk carrier.* The N&W, the expected originating carrier of coal for Salem Harbor 1, 2 and 3, has approximately 54,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the N&W may need as many as 290 additional cars to handle the increased demand from Salem Harbor 1, 2 and 3.

This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

Only about 2 percent of the hopper fleet is in heavy bad order and retirement rates through 1985 are expected to average approximately 1,200/year. The N&W indicated that it is willing to acquire any needed capacity involved in shipment to Salem Harbor 1, 2 and 3 and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utility prepares to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The N&W indicated that transportation facilities at those mine sites within BOM District 8 are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Coal for Salem Harbor 1, 2 and 3 would be barged by Express Marine or Red Star Towing and Transportation to the powerplants from the N&W Lambert's Point Piers in Norfolk, Virginia. Ocean-going barges of 23,000 tons would be used. Existing barge capacity would be available from the Gulf of Mexico areas; however, new barges may have to be built. Barge companies are willing to build the necessary equipment, given a 2 to 3 year lead time and a long-term coal shipping commitment.

Salem Harbor 1, 2 and 3 has sufficient docking space to accommodate inland barges. New England Electric System has indicated that the bulkhead and wharf would need improvements and repairing. It is expected that these repairs can be accomplished prior to the effective date for coal burning.

There are no other obstacles to the delivery of coal to Salem Harbor 1, 2 and 3.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Salem Harbor 1, 2 and 3 presently exist and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Salem Harbor 1, 2 and 3 will not impair the reliability of service in the area served by these powerplants. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Salem Harbor Generating Station is owned by NEPCO, which is owned by New England Electric System, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Salem Harbor 1, 2 and 3 may implement a Prohibition Order will result in the gross capacities indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	Novembe 1981.
Millstone Point 3	Nuclear	Add	+1,150	May 1982.
Pilgrim 2	do	Add	+1,150	October 1982.

Totals:	Added
Mar. 1 to Apr. 30, 1982	+2,115
July 1 to Aug. 31, 1982	+3,265
Sept. 1 to Oct. 31, 1982	+4,445

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Salem Harbor 1, 2 and 3. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Salem Harbor 1, 2 and 3 would implement a Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages, for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Salem Harbor 1, 2 and 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of either Salem Harbor 1, 2 or 3 would be approximately 82 MW, for 1 or 2, and 156 MW for 3 (line 7 attachment 1) which is included in the total outages indicated on line 6 of attachment 1. It is expected that Salem Harbor 1, 2 and 3 will be implementing a Prohibition Order at different times.

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8, attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be acceptable reserve margins taking into consideration the geographical location of Salem Harbor 1, 2 and 3.

5. At the completion of the conversion there will be a net 1.68 NW derating of Salem Harbor 1, 2 and 3 as a result of using coal as their primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Salem Harbor 1, 2 and 3, are as presently forecast during the time required to implement a Prohibition Order by Salem Harbor 1, 2 and 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by NEPCO or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data—Salem Harbor

		Assumed conversion periods megawatt capacity		
		1982 Mar. 1–Apr. 30	1982, July 1–Aug. 31	1982, Sept. 1–Oct. 31
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841	20,841	20,841
2	Added capacity	2,115	3,265	4,445
3	Gross capacity	22,956	24,106	25,286
4	Scheduled outages for maintenance	2,101	687	3,603
5	Projected outages due to prohibition orders	965	1,039	1,598
6	Maximum projected outages due to maintenance and and prohibition orders (line 4 plus line 5)	3,066	1,726	5,201
7	Unit outage	82	82	156
8	Peak load	15,684	18,533	17,162
9	Net dependable capacity	19,890	22,380	20,085
10	Reserve capacity	4,206	3,847	2,923
11	Reserve margin percent (maintenance and prohibition orders)	26.82	20.76	17.03
12	Reserve margin percent (maintenance only)	32.97	26.36	26.34

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do.	West Springfield	2	Do.
Do.	do.	3	July to August 1982.
Do.	Middletown	1	March to April 1982.
Do.	do.	2	May to June 1982.
Do.	do.	3	July to September 1982.
Do.	Norwalk Harbor	1	March to August 1982.
Do.	do.	2	September to February 1983.
The United Illuminating Co.	Bridgeport Harbor	1	March to April 1982.
Do.	do.	2	July to August 1982.
Do.	do.	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	Do.
Do.	do.	2	July to August 1982.
Do.	do.	3	October to November 1982.
Do.	Salem Harbor	1	March to April 1982.
Do.	do.	2	July to August 1982.
Do.	do.	3	September to October 1982.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages, for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Salem Harbor 1, 2 and 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of either Salem Harbor 1, 2 or 3 would be approximately 82 MW, for 1 or 2, and 156 MW for 3 (line 7 attachment 1). The potential loss of capacity from a combined outage of Salem Harbor 1, 2 and 3 would be approximately 320 MW. This represents the maximum potential loss due to outages at these powerplants, but it is expected that Salem Harbor 1, 2 and 3 will be implementing a Prohibition Order at different times. This maximum potential loss of 320 MW is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion period specified on attachment 1 and 2 is shown for purpose of illustration only.)

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed.

Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8, attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be acceptable reserve margins taking into consideration the geographical location of Salem Harbor 1, 2 and 3.

5. At the completion of the conversion there will be a net 1.68 MW derating of Salem Harbor 1, 2 and 3 as a result of using coal as their primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Salem Harbor 1, 2 and 3, are as presently forecast during the time required to implement a Prohibition Order by Salem Harbor 1, 2 and 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by NEPCO or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data—Salem Harbor

		Assumed conversion periods (megawatt capacity)		
		1982, Mar. 1–Apr. 30	1982, July 1–Aug. 31	1982, Sept. 1–Oct. 31
1	Gross Capacity of NEPEX as of 9/1/76	20,841	20,841	20,841
2	Added capacity	2,115	3,265	4,445
3	Gross capacity	22,956	24,106	25,286
4	Scheduled outages for maintenance	2,101	687	3,603
5	Projected outages due to prohibition orders	915	925	1,598
6	Maximum projected outages due to maintenance and prohibition orders (line 4 plus line 5)	3,016	1,612	5,201
7	Unit outage	82	82	[illegible]
8	Peak load	15,684	18,533	17,162
9	Net dependable capacity	19,940	22,494	20,085
10	Reserve capacity	4,256	3,961	2,923
11	Reserve margin percent (maintenance and prohibition orders)	27.14	21.37	17.03
12	Reserve margin percent (maintenance only)	32.97	[illegible]	26.34

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do	Middleton	1	March to April 1982.
Do	do	2	May to June 1982.
Do	do	3	July to September 1982.
Do	Norwalk Harbor	1	March to August 1982.
Do	do	2	September to February 1983.
The United Illuminating Co.	Bridgeport Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	October to November 1982.
Do	Salem Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.

Appendix

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplant named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-085	Northeast Utilities/Holyoke Water Power Co.	Mount Tom	1	Holyoke, Mass.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intension (NOI) to Issue a Prohibition Order.

Holyoke Water Power Co., a wholly-owned subsidiary of Northeast Utilities, shall be referred to as the "utility" and as "HWPCO".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 1 at Mt. Tom Generating Station (Mt. Tom 1) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Northeast Utilities in information filed with FEA dated April 11, 1975, indicated that this powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information Northeast Utilities filed with FEA dated April 11, 1975, and other information available to FEA, the following plant equipment or facilities at Mt. Tom 1 would have to be acquired or refurbished in order for this powerplant to burn coal as its primary energy source:

1. Coal handling equipment
2. Pulverizer, burners and boilers
3. Ash handling equipment

C. FEA proposes to find that on June 22, 1974, Mt. Tom 1 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the quipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Mt. Tom 1 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Mt. Tom 1 will be operated at an 81 percent capacity factor, has a remaining useful life of 20 years (as of the date of this NOI), is expected to have at least 15 years remaining useful life after conversion of the powerplants and on the facts and interpretations stated below.

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Mt. Tom 1 is estimated to be approximately $13,621,000, which assumes that an electrostatic precipitator will be required at a cost of $7,268,000 to comply with the air pollution requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists Inc. report entitled Evaluation Of The Coal Conversion Potential For The Mt. Tom Plant, March 17, 1977, (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and main-

tenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $754,000 per year including $467,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by Northeast Utilities, the price of petroleum products available to Mt. Tom 1 powerplant is approximately $2.29 per million BTU's for oil. This represents $14.29 per barrel of oil, assuming 6.24 million BTU's per barrel.

(ii) Based on information supplied by NUS Corporation and the Center for Energy Policy, Inc., the price of coal available to the Mt. Tom 1 powerplant is approximately $1.37 per million BTU's. This represents $35.07 per ton of coal, assuming 25.6 million BTU's per ton.

(iii) FEA estimates that the burning of coal by this powerplant will result in the reduction of approximately $0.92 cents per million BTU's, or $9,512,000 per year in fuel costs. This estimate is based on fuel consumption presuming Mt. Tom 1 is operated at an 81 percent capacity factor with an average heat rate of 9,912 per BTU's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Mt. Tom 1, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $4,071,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Mt. Tom 1 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $3,3317,000 (this represents an amortized cost over the 15 years remaining useful life of this powerplant after conversion, and is based on a fixed charge rate of 24.4% of the total initial capital investment of $13,-621,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $754,000 (these figures are derived from the figures in paragraphs A.1.a., and b.), but will experience an annual fuel cost savings of approximately $9,512,000. (See paragraph A.1.c.). Considering the fuel cost savings, the total annual cost of operating Mt. Tom 1 should be reduced by $5,441,000.

Since all increased costs of conversion will be offset by the decrease in fuel costs, it is estimated that there will be an overall net decrease in the cost of producing electricity at Mt. Tom 1. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Mt. Tom 1 will result in estimated annual equivalent savings of 1,657,000 barrels of oil that otherwise would be used in providing steam for electric power generation.

FEA proposes to find that, since the increased annual capital investment costs and operating and maintenance costs at the powerplant are offset by the current fuel cost differential between oil and coal burning at this powerplant, and potential future increases in the fuel cost differential in favor of coal, the additional costs associated with burning coal are reasonable.

3. *Financial capabilities of Northeast Utilities.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Mt. Tom 1 would be economically feasible. FEA's analysis took into consideration the $116,975,000 additional capital investment costs required for Northeast Utilities to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2(a) and (c) of ESECA to Northeast Utilities powerplants. FEA related these additional capital investment costs to Northeast Utilities' estimate of its 1977–79 construction budget of $565 million, the total capitalization of Northeast Utilities of $2.3 billion, and the 15 years remaining useful life after conversion of Mt. Tom 1.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financing relations which exists between Northeast Utilities and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $55,807,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiaries of Northeast Utilities. (FEA also took into consideration revenue requirements of the subsidiaries of Northeast Utilities resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Northeast Utilities powerplants.) This estimate of $55,807,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $47,-053,000, which assumed a predicted effect on Northeast Utilities' financial statement and represents revenues required to offset any potential loss in Northeast Utilities' net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $55,807,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting aggregate value of fuel cost savings of approximately $61,900,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiaries of Northeast Utilities should decrease by approximately $6,097,000.

4. *Consumer impact.* The HWPCO, a wholly-owned subsidiary of Northeast Utilities, is the owner and operator of the Mt. Tom generating station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Mt. Tom 1.

The potential initial impact of a Prohibition Order to Mt. Tom 1 is a net decrease in revenues required from HWPCO consumers of approximately $0.00381 per kilowatt hour of electricity sold by HWPCO.

This estimate is based on FEA's analysis of the Ultrasystems Computer Model. The actual amount of the decrease will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which Northeast Utilities selects to finance the increased costs associated with burning coal as a primary energy source at Mt. Tom 1, the extent to which the cost decrease is spread among HWPCO customers, the regulations or policies of the regulatory agencies with jurisdiction over HWPCO regarding inclusion of such cost decreases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Mt. Tom 1 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Mt. Tom 1 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to this powerplant during the period until December 31, 1934.*—A. *Coal availability.*

1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable, (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves approximately 200 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnage of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable

to produce coal nationally in at least the following quantities:

Year:	Production potential (million tons)
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to understimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976 (hereafter (Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (Million tons)
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (Million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976, [hereafter "Coal Conversion Study"]):

Year:	Demand (million tons)
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at this Mt. Tom 1. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committeed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal dry bottom boiler of the type used at Mt. Tom 1, will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's/lb	[1] 12,100
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[1] 15
Ash softening (temp.) (°F)	[1] 2,200
Sulfur (approx.) (percent)	[2] 0.8

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from this powerplant.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1982 and thereafter	404

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Mt. Tom 1 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	8,289
1978	15,806
1979	30,825
1980	36,478
1981	44,688
1982	47,439
1983	51,500
1984	59,679

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Mt. Tom 1 (in a probable regional supply/demand relationship related to the location of this powerplant) from Bureau Mines Districts 1 through 8 and 13 as follows:

Year:	Production (thousand tons)
1977	7,917
1978	14,859
1980	32,217
1981	38,463
1982	41,059
1983	44,915
1984	52,387

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines District 1 through 8 and 13 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand within BOM Districts 1 through 8 and 13 for coal with a 0.61–1.0% sulfur content (which includes the 0.8% maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) percent sulfur 0.61 to 1.0
1977	1,247
1978	2,767
1979	3,854
1980	7,100
1981	8,172
1982	12,331
1983	12,331
1984	12,331

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.e., above, far exceeds this potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13, uncommitted coal production that meets the requirements of Mt. Tom 1 as described in paragraph A.3.a. above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Mt. Tom 1 will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that the powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engi-

neering, University of Pennsylvania, November 7, 1975.)

B. *Coal Transportation.* 1. *Location of plant and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Mt. Tom 1 would probably come from Bureau of Mines (BOM) District 8 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to this powerplant, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Mt. Tom 1 would originate in BOM District 8 on the Norfolk & Western (N&W) railroad via Hagerstown, Maryland, taking Consolidated Railroad Corporation (Conrail) to Binghamton, New York, the Delaware & Hudson (D&H) railroad to Albany, New York, Conrail to Springfield, Massachusetts, and the Boston and Maine (B&M) to Holyoke, Massachusetts. The total rail distance is approximately 850 miles.

One alternate route from BOM District 8 would involve originating coal on the N&W to Kenova, West Virginia, taking the Chessie System Inc. (Chesapeake & Ohio) to Charlottesville, Virginia, the Southern Railroad to Washington, D.C., the Chessie System Inc. (Baltimore & Ohio) to Baltimore, Maryland, Conrail to Springfield, Massachusetts via New York City, Pautucket and Framingham and the Boston and Maine (B&M) to Holyoke, Massachusetts.

Another alternate supply area within BOM District 8 would use the primary route described above.

3. *Originating trunk carrier.* The N&W, the expected originating carrier of coal for Mt. Tom 1, has approximately 54,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the N&W may need as many as 240 additional cars to handle the increased demand from Mt. Tom 1. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

Only about 2 percent of the hopper fleet is in heavy bad order and retirement rates through 1985 are expected to average approximately 1,200 cars/year. The N&W indicated that it is willing to acquire any needed capacity involved in shipment to Mt. Tom 1 and that it would modify its expansion plans given demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utilities prepare to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The N&W indicated that transportation facilities at mine sites within BOM District 8 served by the N&W are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* The primary and alternate destination carrier for Mt. Tom 1 is the Boston and Maine (B&M) Corporation. This company's jurisdiction includes tracks to Mt. Tom 1. The powerplant burned coal received via the B&M as recently as 1974, and this rail carrier indicated that the tracks and coal unloading facilities are in place and adequate to handle the anticipated demand.

The utility has indicated that track and switcher overhaul is necessary. Also required would be reconditioning of coal car unloading and thawing facilities and furnishing an operator control cab inside the car shakeout structure. It is expected that these repairs can be accomplished prior to the effective date for coal burning.

There are no other obstacles to the delivery of coal to Mt. Tom 1.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Mt. Tom 1 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohition Order to Mt. Tom 1 will not impair the reliability of service in the area served by the powerplant. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Mt. Tom Generating Station is owned by HWPCO, which is owned by Northeast Utilities, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Mt. Tom 1 may implement a Prohibition Order will result in the gross capacity indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
			Added	
Totals: Mar. 1 to Apr. 30, 1982			+2,115	

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E-2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Mt. Tom 1. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Mt. Tom 1 would implement a Prohibition Order is as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within dispatching system during the period in which Mt. Tom 1 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplant may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, this projected outage is most likely to occur during the year 1982. The potential loss of capacity from an outage of Mt. Tom 1 would be approximately 136 MW, (line 7 of attachment 1), which is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion period specified on attachments 1 and 2 is shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system, include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparison of the net dependable capacity to the forecast peak load shown on line 8, attachment 1 indicates that the reserve capacity shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of this reserve capacity to the forecast peak load shown on line 8 of attachment 1 results in a reserve margin as indicated on line 11 of attachment 1 (as contrasted with a reserve margin as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be acceptable reserve margins taking into consideration the geographical location of Mt. Tom 1.

5. At the completion of the conversion there will be a net 1.0 MW derating of Mt. Tom 1 as a result of using coal as its primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Mt. Tom 1, are as presently forecast during the time required to implement a Prohibition Order by Mt. Tom 1 there will be no impairment of reliability of service within the meaning of ESECA in the area served by HWPCO or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data Mt. Tom

	Assumed conversion periods, Mar. 1-Apr. 30, 1982	Megawatt capacity
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841
2	Added capacity	2,115
3	Gross capacity	22,956
4	Schedule outage for maintenance	2,101
5	Projected outages due to prohibition orders	915
6	Maximum projected outages due to maintenance and prohibition orders) (line 4 and 5)	3,016
7	Unit outage	136
8	Peak load	15,684
9	Net dependable capacity	19,940
10	Reserve capacity	4,256
11	Reserve margin percent (maintenance and prohibition orders)	27.14
12	Reserve margin percent (maintenance only)	32.97

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do	Middletown	1	March to April 1982.
Do	do	2	May to June 1982.
Do	do	3	July to September 1982.
Do	Norwalk Harbor	1	March to August 1982.
Do	do	2	September to February 1983.
The United Illuminating Company	Bridgeport Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	October to November 1982.
Do	Salem Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.

Appendix

Proposed findings and rationale for notice of intention to issue a prohibition order

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-092	Northeast Utilities/Hartford Electric Light Co.	Middletown	1	Middletown, Conn.
OFU-093			2	
OFU-094			3	

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

Hartford Electric Light Co., a wholly-owned subsidiary of Northeast Utilities, shall be referred to as the "utility" and as "HELCO".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Number 1, Number 2, and Number 3 at Middletown Generating Station (Middletown 1, 2 and 3) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Northeast Utilities in information filed with FEA dated April 11, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information Northeast Utilities filed with FEA dated April 11, 1975, and other information available to FEA, the following plant equipment or facilities at Middletown 1, 2 and 3 would have to be acquired or refurbished in order for these powerplants to burn coal as their primary energy source:

1. Coal handling equipment
2. Pulverizers, burners and boilers
3. Ash handling equipment

C. FEA proposes to find that on June 22, 1974, Middletown 1, 2 and 3 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Middletown 1, 2 and 3 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Middletown 1, 2 and 3 will be operated at a 71 percent capacity factor (this represents a weighted average of each powerplant's projected capacity factor), have a remaining useful life of 20 years (as of the date of this NOI), are expected to have at least 15 years remaining useful life after conversion of the powerplants, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.* a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Middletown 1, 2 and 3 are estimated to be approximately $63,498,000, which assumes that flue gas desulfurization equipment and electrostatic precipitators will be required at a cost of $47,000,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled Evaluation Of The Coal Conversion Potential For The Middletown Generating station, March 1977 (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $14,436,000 per year including $13,905,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by Northeast Utilities, the price of petroleum products available to Middletown 1, 2 and 3 is approximately $2.34 per million BTU's for oil. This represents $14.32 per barrel of oil, assuming 6.1 million BTU's per barrel.

(ii) Based on information supplied by the Federal Power Commission and Consolidated Railroad Corporation the price of coal available to Middletown 1, 2 and 3 is approximately $1.31 per million BTU's. This represents $32.01 per ton of coal, assuming 24.4 million BTU's per ton.

(iii) FEA estimates that the burning of coal by these powerplants will result in the reduction of approximately $1.03 per million BTU's, or $29,579,000 per year in fuel costs. This estimate is based on fuel consumption presuming Middletown 1, 2 and 3 are operated at a weighted average 71 percent capacity factor and with an average heat rate of 11,091 BTU's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Middletown 1, 2 and 3, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $30,144,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Middletown 1, 2 and 3 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $15,708,000 (this represents an amortized cost over the 15 years remaining useful life of these powerplants after conversion, and is based on a fixed charge rate of 24.7% of the total initial capital investment of $63,498,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $14,436,000 (these figures are derived from the figures in paragraphs A.1.a., and b.), but will experience an annual fuel cost savings of approximately $29,579,000. (See paragraphs A.1.c.) The estimated net annual increase in cost of producing electricity at Middletown 1, 2 and 3 after conversion will be $566,000.

Increased costs for conversion will be mitigated by the decrease in fuel costs. The net result, however, will be an increase in the cost of producing electricity at Middletown 1, 2 and 3. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Middletown 1, 2 and 3 will result in an estimated annual equivalent savings of 4,693,000 barrels of oil that otherwise would be used in providing steam for electric power generation. The cost of conversion per barrel of oil saved is estimated to be $0.12.

Although conversion to the burning of coal would be expected to increase the cost of producing electricity at Middletown 1, 2 and 3, FEA proposes to find that such increased cost, per barrel of oil saved, is not unreasonable. This determination is based on consideration of the substantial savings of oil that will result from this conversion. The determination that the costs of converting are not unreasonable is further supported by consideration of such costs in relation to the expected 15 years remaining useful life of the powerplants after conversion, the size and resources of Northeast Utilities as examined in the following analysis of financial capability, the nature of the expected operations of these powerplants, and potential future increases in the fuel cost differential in favor of coal.

3. *Financial capabilities of Northeast Utilities.*—a. *Recovery of capital investment.* FEA proposes find that compliance with a Prohibition Order to Middletown 1, 2 and 3 would be economically feasible. FEA's analysis took into consideration the $116,975,000 additional capital investment required for Northeast Utilities to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibihibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Northeast Utilities powerplants. FEA related these additional capital investment costs to Northeast Utilities' estimate of its 1977–79 construction budget of $565 million, the total capitalization of Northeast Utilities of $2.3 billion, and the 15 years remaining useful life after conversion of Middletown 1, 2 and 3.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financing relationship which exists between Northeast Utilities and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $55,807,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiaries of Northeast Utilities. (FEA also took into consideration revenue requirements of the subsidiaries of Northeast Utilities resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Northeast Utilities powerplants.) This estimate of $55,807,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $47,053,000, which assumed a predicted effect on Northeast Utilities' financial statement and represents revenues required to offset any potential loss in Northeast Utilities' net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $55,807,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting aggregate value of fuel cost savings of approximately $61,900,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiaries of Northeast Utilities should decrease by approximately $6,097,000.

4. *Consumer impact.* The HELCO, a wholly-owned subidiary of Northeast Utilities, is the owner and operator of the Middletown Generating Station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Middletown 1, 2 and 3.

The potential initial impact of a Prohibition Order to Middletown 1, 2 and 3 is a net increase in revenues required from HELCO consumers of approximately $0.00011 per kilowatt hour of electricity sold by HELCO. This estimate is based on FEA's analysis of the Ultrasystems Computer Model.

The actual amount of the increase will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which Northeast Utilities selects to finance the increased costs associated with burning coal as a primary energy source at Middletown 1, 2 and 3, the extent to which the cost increase is spread among HELCO customers the regulations or policies of the regulatory agencies with jurisdiction over HELCO regarding inclusion of such cost increases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibtion Order to Middletown 1, 2 and 3 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Middletown 1, 2 and 3 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves approximately 200 billion tons contain 1% or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Potential production (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (million tons)
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	965
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976, (hereafter "Coal-Conversion Study")):

Year:	Demand (million tons)
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Middletown 1, 2 and 3. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that pulverized-coal, wet bottom and cyclone boilers of the type used at Middletown 1, 2 and 3 will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

	Units 1 and 2	Unit 3
Btu's per pound	11,500 minimum	12,000 minimum.
Moisture	15 pct maximum	15 pct maximum.
Ash	20 pct maximum	18 pct maximum.
Volatile	15 pct minimum	15 pct minimum.
Ash softening temperature	2,300 (° F) maxmium	2,300 (° F) maximum.
Sulfur	2.7 pct maximum (approximate)	2.7 pct maximum (approximate).

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1982 and thereafter	1,175

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Middletown 1, 2 and 3 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	17,595
1978	44,749
1979	97,431
1980	113,720
1981	137,139
1982	144,492
1983	154,118
1984	187,596

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Middletown 1, 2 and 3 (in a probable regional supply/demand relationship related to the location of these powerplants) from Bureau of Mines Districts 1 through 8 and 13 as follows:

Year:	Production (thousand tons)
1977	13,627
1978	34,656
1979	75,580
1980	67,625
1981	104,620
1982	110,318
1983	117,770
1984	143,696

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines District 1 through 8 and 13 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Years:	Demand (thousand tons)
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand for coal from BOM Districts 1 through 8 and 13 with a 2.21–2.71% sulfur content (which includes the 2.7% maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2 (a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Years:	Demand (thousand tons) percent sulfur 2.21 to 2.71
1977	0
1978	0
1979	26
1980	78
1981	78
1982	3,421
1983	3,421
1984	3,421

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Middletown 1, 2 and 3 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Middletown 1, 2 and 3 will probably be bought from producers according to regional supply/demand relationships related to the powerplants' locations from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania November 7 1975.)

B. Coal transportation—1. Location of powerplants and coal supply. Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study") coal for Middletown 1, 2 and 3 would probably come from Bureau of Mines (BOM)

District 3 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Middletown 1, 2 and 3 would originate on the Chessie System, Inc. (Baltimore & Ohio) to Baltimore, MD., then take Consolidated Railroad Corporation (Conrail) to Middletown, Connecticut, via New York City, and New Haven, Connecticut. The total rail distance is approximately 600 miles.

One alternate route from BOM District 3 would involve originating on the Chessie (B&O) to Morgantown, West Virginia, and taking Conrail to Middletown, 1, 2 and 3 via Allentown, Pennsylvania, Newark, New Jersey and New Haven, Connecticut.

Another alternate route from an alternate supply source would be to originate coal from BOM District 3 to Hagerstown, Maryland, and take Conrail to Middletown 1, 2 and 3 via Harrisburg, Pennsylvania, New York City and New Haven, Connecticut.

3. *Originating trunk carrier.* The Chessie (B&O), the expected originating carrier of coal for Middletown 1, 2 and 3, has approximately 21,000 hopper cars with an estimated average capacity of 75 tons. Using an average number of deliveries of 20 per year per 75-ton car, the B&O may need as many as 780 additional cars to handle the increased demand from Middletown 1, 2 and 3. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

The B&O indicated that it is willing to acquire any needed capacity involved in shipment to Middletown 1, 2 and 3, and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utilities prepare to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. This study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The Chessie (B&O) indicated that transportation facilities at those mine sites within BOM District 3 served by the Chessie (B&O) are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Conrail is the destination carrier for Middletown 1, 2 and 3. Conrail's 9,000 foot railroad spur into these powerplants requires considerable repair before it can reliably be used to supply coal. While the powerplants were burning coal as a result of the oil embargo, several hopper cars delivering coal to the powerplants derailed and fell into the Connecticut River.

The Poughkeepsie Bridge, which would ordinarily be used for rail shipment of coal to these powerplants is in serious disrepair and there are no plans for its reconstruction. Therefore, coal would have to be routed around the bridge. This does not present a major obstacle. The Middletown Generating Station is equpped with a shaker-type unloader which is adequate to handle the projected coal shipments. It may need some minor repair before it can be used, since it has not been in routine use for several years. The utility also anticipates the need to recondition coal car unloading and thawing facilities, including an operator control cab inside the car shakeout structure. The company will also have to do some repair work on its locomotives, and replace some units. It is expected that these repairs can be accomplished prior to the effective date for coal burning.

There are no other obstacles to the delivery of coal to Middletown 1, 2, and 3.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no major constraints to coal delivery over the primary route to Middletown 1, 2 and 3 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Middletown 1, 2 and 3 will not impair the reliability of service in the area served by these powerplants. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Middletown Station is owned by HELCO, which is owned by Northeast Utilities, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Middletown 1, 2 and 3 would implement a Prohibition Order will result in the gross capacities indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
Millstone Point 3	Nuclear	Add	+1,150	May 1982.
Pilgrim 2	do	Add	+1,180	October 1982.

Totals:	*Added*
Mar. 1 to Apr. 30, 1982	+2,115
May 1 to June 30, 1982	+3,265
July 1 to Aug. 31, 1982	+3,265
Sept. 1 to Oct. 31, 1982	+4,445

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Middletown 1, 2, and 3. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Middletown 1, 2, and 3 would implement a Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Middletown 1, 2 and 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months each for Middletown 1 and 2, and 3 months for Middletown 3 is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of Middletown 1, 2 or 3 would be approximately 69 MW, 114 MW and 239 MW (line 7, attachment 1) respectively. The potential loss of capacity from a combined outage of Middletown 1, 2 and 3 would be approximately 422 MW. This represents the maximum potential loss due to outages at these powerplants, but it is expected that Middletown 1, 2 and 3 will be implementing a Prohibition Order at different times. This maximum potential loss of 422 MW is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion period specified on attachments 1 and 2 is shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system, include normal sched-

uled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8, attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be marginally acceptable reserve margins taking into consideration the geographical location of Middletown 1, 2 and 3.

5. At the completion of the conversion there will be a net 12 MW derating of Middletown 1, 2, and 3 as a result of using coal as their primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Middletown 1, 2 and 3, are as presently forecast during the time required to implement a Prohibition Order by Middletown 1, 2 and 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by HELCO or in the dispatching system as a result of the Order.

ATTACHMENT 1

New England power exchange reliability data—Middletown

		Assumed conversion periods (megawatt capacity)			
		1982, Mar. 1–Apr. 30	1982, May 1–June 30	1982, July 1–Aug. 31	1982, Sept. 1–Sept. 30
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841	20,841	20,841	20,841
2	Added capacity	2,115	3,265	3,265	4,445
3	Gross capacity	22,956	24,106	24,106	25,286
4	Scheduled outages for maintenance	2,101	2,348	687	3,603
5	Projected outages due to prohibition orders	915	277	925	1,598
6	Maximum projected outages due to maintenance and prohibition orders (4 plus 5)	3,016	2,625	1,612	5,201
7	Unit outage	69	114	239	239
8	Peak load	15,684	18,533	18,533	17,162
9	Net dependable capacity	19,940	21,481	22,494	20,085
10	Reserve capacity	4,256	2,948	3,961	2,923
11	Reserve margin percent (maintenance and prohibition orders)	27.14	15.91	21.37	17.03
12	Reserve margin percent (maintenance only)	32.97	17.40	26.36	26.34

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do	Middletown	1	March to April 1982.
Do	do	2	May to June 1982.
Do	do	3	July to September 1982.
Do	Norwalk Harbor	1	March to August 1982.
Do	do	2	September to February 1983.
The United Illuminating Co	Bridgeport Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.
Eastern Utilities Associates	Somerset	6	March to April 1982.
New England Electric System	Brayton Point	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	October to November 1982.
Do	Salem Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-095 OFU-096	Northeast Utilities/Connecticut Light & Power Co.	Norwalk Harbor	1 2	Norwalk, Conn.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

Connecticut Light and Power Co., a wholly-owned subsidiary of Northeast Utilities, shall be referred to as the "utility" and as "CL&P".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Number 1 and Number 2 at Norwalk Harbor Generating Station (Norwalk Harbor 1 and 2) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Northeast Utilities, in information filed with FEA dated April 11, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information Northeast Utilities filed with FEA dated April 11, 1975, and other information available to FEA, the following plant equipment or facilities at Norwalk Harbor 1 and 2 would have to be acquired or refurbished in order for these powerplants to burn coal as their primary energy source:

1. Coal handing equipment
2. Pulverizer, burners and boilers
3. Ash handling equipment

C. FEA proposes to find that on June 22, 1974, Norwalk Harbor 1 and 2 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in Paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Norwalk Harbor 1 and 2 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Norwalk Harbor 1 and 2 will be operated at a 77 percent capacity factor (this represents a weighted average of each powerplant's projected capacity factor), have a remaining useful life of 20 years (as of the date of this NOI), are expected to have at least 15 years remaining useful life after conversion of the powerplants, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Norwalk Harbor 1 and 2 are estimated to be approximately $39,856,000 which assumes that flue gas desulfurization equipment and electrostatic precipitators will be required at a cost of $30,335,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled Evaluation Of The Coal Conversion Potential For The Norwalk Harbor Plant, March 22, 1977 (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $11,934,000 per year including $11,381,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by Northeast Utilities, the price of petroleum products available to Norwalk Harbor 1 and 2 is approximately $2.35 per million BTU's for oil. This represents $14.36 per barrel of oil, assuming 6.1 million BTU's per barrel.

(ii) Based on information supplied by the Federal Power Commission and Consolidated Railroad Corp., the price of coal available to Norwalk Harbor 1 and 2 is approximately $1.32 per million BTU's. This represents $30.85 per ton of coal, assuming 24.4 million BTU's per ton.

(iii) FEA estimates that the burning coal by these powerplants will result in the reduction of approximately $1.04 per million BTU's, or $22,814,000 per year in fuel costs. This estimate is based on fuel consumption presuming Norwalk Harbor 1 and 2 are operated at a weighted average 77 percent capacity factor and with an average heat rate of 10,100 BTU's per kilowatt hours.

d. *Total annual costs associated with conversion.* As a result of the conversion of Norwalk Harbor 1 and 2, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $21,592,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Norwalk Harbor 1 and 2 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $9,658,000 (this represents an amortized cost over the 15 years remaining useful life of these powerplants after conversion, and is based on a fixed charge rate of 24.2% of the total initial capital investment of $39,856,000) and annual operating and maintenance costs, exclusive of fuel costs, of approximately $11,934,000 (these figures are derived from the figures in paragraphs A.1.a., and b.), but will experience an annual fuel cost savings of approximately $22,814,000. (See paragraph A.1.c.). Considering the fuel cost savings, the total annual cost of operating Norwalk Harbor 1 and 2 should be reduced by $1,222,000.

Since all increased costs of conversion will be offset by the decrease in fuel costs, it is estimated that there will be an overall net decrease in the cost of producing electricity at Norwalk Harbor 1 and 2. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Norwalk Harbor 1 and 2 will result in an estimated annual equivalent savings of 3,590,000 barrels of oil that otherwise would be used in providing steam for electric power generation.

FEA proposes to find that, since the increased annual capital investment costs and operating and maintenance costs at the powerplants are offset by the current fuel cost differential between oil and coal burning at these powerplants, and potential future increases in the fuel cost differential in favor of coal, the additional costs associated with burning coal are reasonable.

3. *Financial capabilities of Northeast Utilities.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Norwalk Harbor 1 and 2 would be economically feasible. FEA's analysis took into consideration the $116,975,000 additional capital investment costs required for Northeast Utilities to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Northeast Utilities powerplants. FEA related these additional capital investment costs to Northeast Utilities' estimate of its 1977–79 construction budget of $565 million, the total capitalization of Northeast Utilities of $2.3 billion, and the 15 years remaining useful life after conversion of Norwalk Harbor 1 and 2.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financing relationship which exists between Northeast Utilities and its subsidiaries, and their combined financial capabilities to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $55,807,000. This also represents the total estimated annual incremental increase in revenue requirements of the subsidiaries of Northeast Utilities. (FEA also took into consideration revenue requirements of the subsidiaries of Northeast Utilities resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Northeast Utilities powerplants.) This estimate of $55,807,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Costs Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Indentification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $47,053,000, which assumed a predicted effect on Northeast Utilities' financial statement and represents revenues required to offset any potential loss in Northeast Utilities' net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $55,807,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting aggregate value of fuel cost savings of approximately $61,900,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the affected subsidiaries of Northeast Utilities should decrease by approximately $6,097,000.

4. *Consumer impact.* The CL&P, a wholly-owned subsidy of Northeast Utilities, is the owner and operator of the Norwalk Harbor Generating Station and the relevant entity for considering the consumer impact of compliance with a Prohibition Order to Norwalk Harbor 1 and 2.

The potential initial impact of a Prohibition Order to Norwalk Harbor 1 and 2 is a net decrease in revenues required from CL&P consumers of approximately $0.00013 per kilowatt hour of electricity sold by CL&P. This estimate is based on FEA's analysis of the Ultrasystems Computer Model. The actual amount of the decrease will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which Northeast Utilities selects to finance the increased costs associated with burning coal as a primary energy source at Norwalk Harbor 1 and 2, the extent to which the cost decrease is spread among CL&P customers, the regulations or policies of the regulatory agencies with jurisdiction over CL&P regarding inclusion of such cost decreases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Norwalk Harbor 1 and 2 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Norwalk Harbor 1 and 2 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable, (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) hereafter "BOM Survey"). Within these recoverable reserves approximately 200 billion tons contain 1% or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which toigether provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that

extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	[1]732.3
1978	[1]791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*Production (million tons)*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows; (FEA 1976 National Energy Outlook):

Year:	*Demand (million tons)*
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows; (Coal availability and Demand: Round I and II Coal Conversion Candidates, August, 1976, hereafter "Coal Conversion Study"):

Year:	*Demand (million tons)*
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Norwalk Harbor 1 and 2. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that pulverized-coal dry bottom boilers, of the type used at Norwalk Harbor 1 and 2 will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

Btu's/lb	11,500
Moisture (percent)	[1]15
Ash (percent)	[1]20
Volatile (percent)	[2]15
Ash softening (temp.) (°F)	[2]2,200
Sulfur (approx.) (percent)	[1]2.7

[1] Maximum.
[2] Minimum.

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	*Demand (thousand tons)*
1982 and thereafter	898

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Norwalk Harbor 1 and 2 in a nationwide market as follows:

Year:	*Production (thousand tons)*
1977	31,209
1978	67,757
1979	133,523
1980	158,405
1981	188,439
1982	198,960
1983	213,044
1984	254,205

d. *National ESECA prohibition order demand for coal regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	*Demand (thousand tons)*
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Norwalk Harbor 1 and 2 (in a probable regional supply/demand relationship related to the location of these powerplants) from Bureau of Mines Districts 1 through 8 and 13 as follows:

Year:	*Production (thousand tons)*
1977	24,221
1978	49,982
1979	95,809
1980	110,977
1981	130,841
1982	138,447
1983	148,705
1984	176,569

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines Districts 1 through 8 and 13 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons)*
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand within BOM Districts 1 through 8 and 13 for coal with a 2.21–2.71 percent sulfur content (which includes the 2.7 percent maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons) percent sulfur 2.21 to 2.71*
1977	0
1978	0
1979	26
1980	78
1981	78
1982	3,421
1983	3,421
1984	3,421

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Norwalk Harbor 1 and 2 as de-

scribed in paragraph A.3.a. above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Norwalk Harbor 1 and 2 will probably be bought from producers according to regional supply/demand relationships related to the powerplants' locations from Bureau of Mines Districts 1 through 8 and 18. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal Transportation.*—1. Location of *powerplants and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Norwalk Harbor 1 and 2 would probably come from Bureau of Mines (BOM) District 8 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Norwalk Harbor 1 and 2 would originate on the Chessie System, Inc. (Baltimore & Ohio) to Baltimore, Md., then take Consolidated Railroad Corporation (Conrail) to Port Reading, New York, and use inland barges (operated by Express Marine or Red Star Towing and Transportation) to Norwalk, Connecticut. The total rail distance is approximately 400 miles, with a marine leg of about 70 miles.

One alternate route from BOM District 8 would involve originating coal on the Chessie (B&O) to Baltimore, Md. and taking Conrail to Norwalk, Connecticut.

Another alternate supply area within District 8 would use the primary route described above.

3. *Originating trunk carrier.* The Chessie (B&O), the expected originating carrier of coal for Norwalk Harbor 1 and 2, has approximately 21,000 hopper cars with an estimated average capacity of 75 tons. Using an average number of deliveries of 20 per year per 75-ton car, the B&O may need as many as 600 additional cars to handle the increased demand from Norwalk Harbor 1 and 2. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity. The B&O indicated that it is willing to acquire any needed capacity involved in shipment to Norwalk Harbor 1 and 2 and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utilities prepare to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The B&O indicated that transportation facilities at those mine sites within BOM District 8 are in satisfactory operating conditions and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Delivery of coal to Norwalk Harbor 1 and 2 would be accomplished by inland barges, carrying coal from Port Reading, New York. Express Marine and Red Star Towing and Transportation have expressed willingness to transport the projected amount of coal. Existing available barge capacity is sufficient to supply these powerplants. However, if other powerplants in this area create additional demand for barges, new capacity will have to be built. The barge companies are willing to do the necessary construction, given sufficient lead time and a long term barging commitment.

Docking facilities at Norwalk Harbor 1 and 2 are adequate to permit delivery of coal by inland barge. Since the draft in the channel to the powerplants is only 11 feet, barges can only come in at high tide. Furthermore, due to local regulations, coal unloading can only proceed at certain times of the day. Neither of these factors is expected to present a significant obstacle to barge delivery of coal to the powerplants. Norwalk Harbor 1 and 2 are equipped with a bucket type unloader capable of handling the projected load. The unloader may require some minor repair before being put to use, since it has not been in routine use for several years. It is expected that these repairs can be accomplished prior to the effective date for coal burning.

There are no other obstacles to the delivery of coal to Norwalk Harbor 1 and 2.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Norwalk Harbor 1 and 2 presently exist, and an alternate route is available.

IV. *The prohibition of the burning of natural gas or petroleum products as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Norwalk Harbor 1 and 2 will not impair the reliability of service in the area served by these powerplants. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Norwalk Harbor Generating Station is owned by CL&P, which is owned by Northeast Utilities, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes up to the period in which Norwalk Harbor 1 and 2 may implement a Prohibition Order will result in the gross capacities indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,158	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
Millstone Point 3	Nuclear	Add	+1,150	May 1982.
Pilgrim 2	do	Add	+1,180	October 1982.
Stony Brook 2	Oil	Add	+120	November 1982.

Totals:	Added
Mar. 1 to Apr. 30, 1982	+2,115
May 1 to June 30, 1982	+3,265
July 1 to Aug. 31, 1982	+3,265
Sept. 1 to Oct. 31, 1982	+4,445
Nov. 1 to Dec. 31, 1982	+4,565
Jan. 1 to Feb. 28, 1983	+4,565

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Norwalk Harbor 1 and 2. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Norwalk Harbor 1 and 2 would implement a Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak-load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Norwalk Harbor 1 and 2 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 6 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of either Norwalk Harbor 1 or 2 would be approximately 163 MW (line 7, attachment 1). The potential loss of capacity from a combined outage of Norwalk Harbor 1 and 2 would be approximately 326 MW (line 7 of attachment 1). This represents the maximum potential loss due to outages at these powerplants, but it is expected that Norwalk Harbor 1 and 2 will be implementing a Prohibition Order at different times. This maximum potential loss of 326 NW is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion periods specified on attachment 1 are shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system, include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information , the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8, attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be marginally acceptable reserve margins taking into consideration the geographical location of Norwalk Harbor 1 and 2.

5. At the completion of the conversion there will be a net 10.3 NW derating or Norwalk Harbor 1 and 2 as a result of using coal as their primary energy source.

6. Existing transmission system interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Norwalk Harbor 1 and 2, are as presently forecast during the time required to implement a Prohibition Order by Norwalk Harbor 1 and 2, there will be no impairment of reliability of service within the meaning of ESECA in the area served by CL&P or in the dispatching system as a result of the Order.

Attachment 1

New England power exchange reliability data—Norwalk Harbor

		Assumed conversion periods (megawatt capacity)					
		1982, Mar. 1-Apr. 30	1982, May 1-June 30	1982, July 1-Aug. 31	1982, Sept. 1-Oct. 31	1982, Nov. 1-Dec. 31	1983, Nov. 1-Feb. 28
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841	20,841	20,841	20,841	20,841	20,841
2	Added capacity	2,115	3,265	3,265	4,445	4,565	4,565
3	Gross capacity	22,956	24,106	24,106	25,286	25,406	25,406
4	Scheduled outages for maintenance	2,101	2,348	687	3,603	1,310	851
5	Projected outages due to prohibition orders	915	277	925	1,598	1,199	1,199
6	Maximum projected outages due to maintenance and prohibition orders (line 4 plus line 5)	3,016	2,625	1,612	5,201	2,113	1,509
7	Unit outage	163	163	163	163	163	163
8	Peak load	15,684	18,533	18,533	17,162	20,192	20,192
9	Net dependable capacity	19,940	21,481	22,494	20,085	23,293	23,897
10	Reserve capacity	4,256	2,948	3,961	2,923	3,101	3,705
11	Reserve margin percent (maintenance and prohibition orders)	27.14	15.91	21.37	17.03	15.36	18.35
12	Reserve margin percent (maintenance only)	32.97	17.40	26.36	30.31	19.33	19.1

Attachment 2

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do	Middletown	1	March to April 1982.
Do	do	2	May to June 1982.
Do	do	3	July to September 1982.
Do	Norwalk Harbor	1	March to August 1982.
Do	do	2	September to February 1983.
The United Illuminating Co.	Bridgeport Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	October to November 1982.
Do	Salem Harbor	1	March to April 1982.
Do	do	2	July to August 1982.
Do	do	3	September to October 1982.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-099	United Illuminating Co.	Bridgeport Harbor	1	Bridgeport, Conn.
OFU-100			2	
OFU-101			3	

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

United Illuminating Company shall be referred to as the "utility" and as "United Illuminating".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Numbers 1, 2 and 3 at Bridgeport Harbor Generating Station (Bridgeport Harbor 1, 2 and 3) had the capability and necessary plant equipment to burn coal. This proocosed finding is based on the facts and interpretations stated below:

A. United Illuminating, in information filed with FEA dated July 10, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information United Illuminating filed with FEA dated July 10, 1975, and other information available to FEA, the following plant equipment or facilities at Bridgeport Harbor 1, 2 and 3 would have to be acquired or refurbished in order for these powerplants to burn coal as their primary energy source:

1. Coal handling equipment.
2. Pulverizers, burners and boilers.
3. Ash handling equipment.

C. FEA proposes to find that on June 22, 1974, Bridgeport Harbor 1, 2 and 3 had all oter significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in Paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Bridgeport Harbor 1, 2 and 3 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Bridgeport Harbor 1, 2 and 3 will be operated at a 55 percent capacity factor, (this represents a weighted average of each powerplant's projected capacity factor), have an average remaining useful life of 24 years (as of the date of this NOI), are expected to have at least 19 years remaining useful life after conversion of the powerplants, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Bridgeport Harbor 1, 2 and 3 are estimated to be approximately $62,643,000, which assumes that flue gas desulfization equipment (venturi scrubbers included) will be required at a cost of $58,192,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled Evaluation Of The Coal Conversion Potential Of The Bridgeport Harbor Plant, March 25, 1977, (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $21,861,000 per year including $21,239,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCo. Report.

c. *Fuel costs.* (i) Based on information supplied by United Illuminating, the price of petroleum products available to Bridgeport Harbor 1, 2 and 3 is aproximately $2.26 per million BTU's for oil. This represents $14.01 per barrel of oil, assuming 6.2 million BTU's per barrel.

(ii) Based on information supplied by the Federal Power Commission and Consolidated Railroad Corp. the price of coal available to Bridgeport Harbor 1, 2 and 3 is approximately $1.31 per million BTU's. This represents $32.01 per ton of coal, assuming 24.4 million BTU's per ton.

(iii) FEA estimates that the burning of coal by these powerplants will result in the reduction of approximately 95 cents per million BTU's, or $29,481,000 per year in fuel costs. This estimate is based on fuel consumption presuming Bridgeport Harbor 1, 2 and 3 are operated at a weighted average 55 percent capacity factor and with an average heat rate of 10,017 BTU's per kilowatt hour.

d. *Total annual cost associated with conversion.* As a result of the conversion of Bridgeport Harbor 1, 2 and 3, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $37,720,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Bridgeport Harbor 1, 2 and 3 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs of approximately $15,859,000 (this represents an amortized cost over the 19 years remaining useful life of these powerplants after conversion, and is based on a fixed charge rate of 25.3% of the total initial capital investment of $62,643,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $21,861,000 (these figures are derived from the figures in paragraphs A.1.a., and b.), but will experience an annual fuel cost savings of approximately $29,481,000. (See paragraph A.1.c.). The estimated net annual increase in cost of producing electricity at Bridgeport Harbor 1, 2 and 3 after conversion will be $8,239,000.

Increased costs for conversion will be mitigated by the decrease in fuel costs. The net result, however, will be an increase in the cost of producing electricity at Bridgeport Harbor 1, 2 and 3. The costs to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

Th use of coal at Bridgeport Harbor 1, 2 and 3 will result in an estimated annual equivalent savings of 5,043,000 barrels of oil that otherwise would be used in providing steam for electric power generation. The cost of conversion per barrel of oil saved is estimated to be $1.63.

Although conversion to the burning of coal would be expected to increase the cost of producing electricity at Bridgeport Harbor 1, 2 and 3, FEA proposes to find that such increased cost, per barrel of oil saved, is not unreasonable. This determination is based on consideration of the substantial savings of oil that will result from this conversion. The determination that the costs of converting are not unreasonable is further supported by consideration of such costs in relation to the expected 19 years remaining useful life of the powerplants after conversion, the size and resources of United Illuminating as examined in the following analysis of financial capability, the nature of the expected operations of these powerplants, and potential future increases in the fuel cost differential in favor of coal.

3. *Financial capabilities of United Illuminating.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Bridgeport Harbor 1, 2 and 3 would be economically feasible. FEA's analysis took into consideration the $62,643,000 additional capital investment costs required for United Illuminating to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to United Illuminating powerplants. FEA related these additional capital investment costs to United Illuminating's estimate of its 1977–79 construction budget of $235 million, the total capitalization of United Illuminating of $412 million, and the 19 years remaining useful life after conversion of Bridgeport Harbor 1, 2 and 3.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financial capabilities of the utility to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $37,720,000. This also represents the total estimated annual incremental increase in revenue requirements of the utility. (FEA also took into consideration revenue requirements of the utility resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to United Illuminating powerplants.) This estimate of $37,720,000 in revenue requirements is based on an investment-oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $38,433,000, which assumed a predicted effect on the utility's financial statement and represents revenues required to offset any potential loss in United Illuminating's net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $37,720,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting value of fuel cost savings of approximately $29,481,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of the utility should increase by approximately $8,239,000.

4. *Consumer Impact.* The potential initial impact of a Prohibition Order to Bridgeport Harbor 1, 2 and 3 is a net increase in revenues required from United Illuminating consumers of approximately $0.0019 per kilowatt hour of electricity sold by United Illuminating. This estimate is based on FEA's analysis of the Ultrasystems Computer Model. The actual amount of the increase will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which United Illuminating selects to finance the increased costs associated with burning coal as a primary energy source at Bridgeport Harbor 1, 2 and 3, the extent to which the cost increase is spread among United Illuminating customers, the regulations or policies of the regulatory agencies with jurisdiction over United Illuminating regarding inclusion of such cost increases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Bridgeport Harbor 1, 2 and 3 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Pro-

hibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Bridgeport Harbor 1, 2 and 3 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*—A. *Coal availability.*

1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines date show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recover able (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) (hereafter "BOM Survey")). Within these recoverable reserves approximately 200 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	Production potential (million tons)
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study") indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (million tons)
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976 (hereafter "Coal Conversion Study")):

Year:	Demand (million tons)
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	26.8
1983	26.8
1984	26.8

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at these powerplants. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated thir uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that cyclone and pulverized-coal dry bottom boilers of the type used at Bridgeport Harbor 1, 2 and 3, will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements.

	Units 1 and 2	Unit 3
Btu's per pound	12,000 minimum	11,700 minimum.
Moisture	15 pct maximum	15 pct maximum.
Ash	18 pct maximum	20 pct maximum.
Volatile	15 pct minimum	15 pct minimum.
Ash softening temperature	2,200 (°F) maximum	2,200 (°F) minimum.
Sulfur	2.7 pct maximum (approximate)	2.7 pct maximum (approximate).

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year	Demand (1,000 tons)	
	Units 1 and 2	Unit 3
1982 and thereafter	498	772

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Bridgeport Harbor 1, 2 and 3 in a nationwide market as follows:

Year	Production (1,000 tons)	
	Units 1 and 2	Unit 3
1977	17,595	29,757
1978	44,749	64,064
1979	97,431	125,895
1980	113,720	148,591
1981	137,139	176,825
1982	144,492	186,738
1983	154,118	200,028
1984	187,596	238,420

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	26,800
1983	26,800
1984	26,800

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Bridgeport Harbor 1, 2 and 3 in a probable regional supply/demand relationship related to the location of these powerplants from Bureau of Mines Districts 1 through 13 as follows:

Year	Production (1,000 tons)	
	Units 1 and 2	Unit 3
1977	13,627	24,204
1978	24,656	40,941
1979	75,580	95,725
1980	87,625	109,880
1981	104,620	129,725
1982	110,318	137,324
1983	117,770	147,573
1984	143,696	175,406

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines Districts 1 through 8 and 13 expected to result from this NOI from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons)*
1977	2,369
1978	4,449
1979	5,811
1980	10,351
1981	11,905
1982	19,503
1983	19,503
1984	19,503

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand within BOM Districts 1 through 8 and 13 for coal with a 2.21–2.71 percent sulfur content (which includes the 2.7 percent maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons) percent sulfur 2.21 to 2.71*
1977	0
1978	0
1979	26
1980	78
1981	78
1982	3,421
1983	3,421
1984	3,421

The regional planned production of coal, stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 1 through 8 and 13 uncommitted coal production that meets the requirements of Bridgeport Harbor 1, 2 and 3 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Bridgeport Harbor 1, 2 and 3 will probably be bought from producers according to regional supply/demand relationships related to the powerplants' locations from Bureau of Mines Districts 1 through 8 and 13. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplants and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter after "Transportation Availability Study"), coal for Bridgeport Harbor 1, 2 and 3 would probably come from Bureau of Mines (BOM) District 8 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Bridgeport Harbor 1, 2 and 3 would originate on the Chessie System Inc. (Baltimore & Ohio) from District 8 to Baltimore, Maryland, taking Consolidated Railroad Corporation (Conrail) New York, New York, and ship the coal from Port Reading to Bridgeport Harbor 1, 2 and 3 via inland barges using Express Marine or Red Star Towing and Transportation. The total rail distance is approximately 400 miles, with a marine leg of about 60 miles.

One alternate route from BOM District 8 would involve originating coal on the Chessie (B&O) to Baltimore, Maryland, and taking Conrail to Bridgeport, Connecticut.

Another alternate route from an alternate supply area would be to originate coal from BOM District 8 to Kenova, West Virginia, on Chessie (C&O) to Baltimore, Maryland, on the B&O and by inland barge to Bridgeport, Connecticut.

3. *Originating trunk carrier.* The Chessie (B&O), the expected originating carrier of coal for Bridgeport Harbor 1, 2 and 3, has approximately 21,000 hopper cars with an estimated average capacity of 75 tons. Using an average number of deliveries of 20 per year per 75-ton car, the B&O may need as many as 850 additional cars to handle the increased demand from the Bridgeport Harbor 1, 2 and 3. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

The B&O indicated that it is willing to acquire any needed capacity involved in shipment to the Bridgeport Harbor facility and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carying capacity could be expanded as quickly as the utility prepares to burn coal.

FEA's "Transportation Availability Study" concluded that, for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal.

The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The B&O indicated that transportation facilities at those mine sites within BOM District 8 are in satisfactory operating condition and loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* Coal would be delivered to Bridgeport Harbor 1, 2 and 3 from Port Reading, New York, by inland barge. Red Star Towing and Transportation and Express Marine have expressed willingness to provide the necessary services. Although existing barge capacity is sufficient to handle the load imposed by Bridgeport Harbor 1, 2 and 3, if all potential Prohibition candidates studied were ordered to convert, some new barges would have to be built. The barge companies are willing to undertake the necessary construction, given a long enough lead time and a long-term barging commitment.

Bridgeport Harbor 1, 2 and 3 have facilities to receive coal by either barge or rail. In the past coal was received by rail, coming in on a New Haven Railroad (Conrail) spur, and being unloaded by a shaker unloader. According to the utility, however, coal bought in the future would probably come in by barge. The docking facilities are adequate to receive inland barges. A continuous bucket unloader was installed in 1968 and was never used. This unloading system will be capable of handling the projected load, although it will require some repair work to be brought to a satisfactory operating condition. It is expected that these repairs can be accomplished prior to the effective date for coal burning.

There are no other obstacles to the delivery of coal to Bridgeport Harbor 1, 2 and 3.

5. *Conclusion.* Coal transportation facilities will be available for the period of Prohibition Order is expected to be in effect since no significant constraints to coal delivery over the primary route to Bridgeport Harbor 1, 2 and 3 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Bridgeport Harbor 1, 2 and 3 will not impair the reliability of service in the area served by these powerplants. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Bridgeport Harbor Station is owned by United Illuminating Company, which is a member of the New England Power Exchange (NEPEX), which is within the geographical area of the New England Subregion of the Northeast Power Coordinating Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means NEPEX.

3. The gross capacity as of September 1976, of all dispatching system powerplants was 20,841 MW. (See line 1, attachment 1.)

4. Proposed changes, up to the period in which Bridgeport Harbor 1, 2 and 3 would implement a Prohibition Order will result in the gross capacities indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Potter 2	Oil	Add	+95	January 1977.
Wyman 4	Oil	Add	+600	December 1978.
Seabrook 1	Nuclear	Add	+1,150	June 1981.
Stony Brook 1	Oil	Add	+270	November 1981.
Millstone Point 3	Nuclear	Add	+1,150	May 1982.
Pilgrim 2	do	Add	+1,180	October 1982.

Totals:	Added
Mar. 1 to Apr. 30, 1982	+2,115
July 1 to Aug. 31, 1982	+3,265
Sept. 1 to Oct. 31, 1982	+4,445

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dated October 25, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, as well as the New England Power Exchange Conversion Schedule (attachment 2 to this NOI), gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Bridgeport Harbor 1, 2 and 3. The New England Power Exchange Conversion Schedule is FEA's estimate of the outage times for all the powerplants in NEPEX that are currently being considered for Prohibition Orders. The schedule assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. Forecasts of peak loads for the dispatching system during the period in which Bridgeport Harbor 1, 2 and 3 would implement a Prohibition Order are as indicated on line 8 of attachment 1.

2. The forecast peak loads have been compared with loads in previous similar periods. The annual peak load growth rate for these forecasts is 5.5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the periods in which Bridgeport Harbor 1, 2 and 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months for each powerplant is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplants may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, these projected outages are most likely to occur during the year 1982. The potential loss of capacity from an outage of Bridgeport Harbor 1, 2 and 3 would be approximately 62 MW, 180 MW, and 400 MW respectively (line 7 attachment 1). The potential loss of capacity from a combined outage of Bridgeport Harbor 1, 2 and 3 would be approximately 662 MW. This represents the maximum potential loss due to outages at these powerplants, but it is expected that Bridgeport Harbor 1, 2 and 3 will be implementing a Prohibition Order at different times. This maximum potential loss of 662 MW is included in the total outages indicated on line 6 of attachment 1. (The assumed conversion period specified on attachments 1 and 2 is shown for purpose of illustration only.)

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohjbition Orders, if the attached New England Power Exchange Conversion Schedule is followed. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity of the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing these net dependable capacities to the forecast peak loads shown on line 8 of attachment 1 indicates that the reserve capacities shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of these reserve capacities to the forecast peak loads shown on line 8 of attachment 1 results in reserve margins as indicated on line 11 of attachment 1 (as contrasted with reserve margins as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers these to be acceptable reserve margins taking into consideration the geographical location of Bridgeport Harbor 1, 2 and 3.

5. At the completion of the conversion, there will be a net 19.5 MW derating of Bridgeport Harbor 1, 2 and 3 as a result of using coal as their primary energy source.

6. Existing transmission interconnections may transfer an additional 1,925 MW into the dispatching system. This capacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion.* If dispatching system conditions, including any schedule outage by Bridgeport Harbor 1, 2 and 3, are as presently forecast during the time required to implement a Prohibition Order by Bridgeport Harbor 1, 2 and 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by United Illuminating or in the dispatching system as a result of the Order.

New England power exchange reliability data—Bridgeport Harbor

		Assumed conversion periods (megawatt capacity)		
		1982 Mar. 1–Apr. 40	1982 July 1–Aug. 31	1982 Sept. 1–Oct. 31
1	Gross capacity of NEPEX as of Sept. 1, 1976	20,841	20,841	20,841
2	Added capacity	2,115	3,265	4,445
3	Gross capacity	22,956	24,106	25,286
4	Scheduled outages for maintenance	2,101	687	3,603
5	Projected outages due to prohibition orders	915	925	1,598
6	Maximum projected outages due to maintenance and prohibition orders (line 4 plus 5)	3,016	1,612	5,201
7	Unit outage	82	180	400
8	Peak load	15,684	18,533	17,162
9	Net dependable capacity	19,941	22,494	20,085
10	Reserve capacity	4,265	3,961	2,923
11	Reserve margin percent (maintenance and prohibition orders)	27.14	21.37	17.03
12	Reserve margin percent (maintenance only)	32.97	26.36	26.34

New England power exchange conversion schedule

NEPEX member	Station	Unit	Assumed conversion dates
Northeast Utilities	Mt. Tom	1	March to April 1982.
Do.	Middletown	1	Do.
Do.	do.	2	May to June 1982.
Do.	do.	3	July to September 1982.
Do.	Norwalk Harbor	1	March to August 1982.
Do.	do.	2	September to February 1983.
The United Illuminating Co.	Bridgeport Harbor	1	March to April 1982.
Do.	do.	2	July to August 1982.
Do.	do.	3	September to October 1982.
Eastern Utilities Associates	Somerset	8	March to April 1982.
New England Electric System	Brayton Point	1	Do.
Do.	do.	2	July to August 1982.
Do.	do.	3	October to November 1982.
Do.	Salem Harbor	1	March to April 1982.
Do.	do.	2	July to August 1982.
Do.	do.	3	September to October 1982.

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ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

Intention to Issue Prohibition Orders to Certain Powerplants

The Federal Energy Administration (FEA) hereby gives notice of its intention to issue Prohibition Orders, pursuant to the authorities granted it by section 2 (a) and (b) of the Energy Supply and Environmental Coordination Act of 1974, as amended (ESECA), and Chapter 10, Code of Federal Regulations (10 CFR), Parts 303 and 305 to the following powerplants:

Docket No.	Owner	Generating station	Powerplant No.	Location
OFU-154	Corn Belt Power Cooperative	Wisdom	1	Spencer, Iowa.
OFU-155	Independence Power & Light Department.	Blue Valley	3	Independence, Mo.
OFU-156	St. Joseph Light & Power Co.	Lake Rd.	5	St. Joseph, Mo.
OFU-157	do.	do.	6	Do.
OFU-159	Fremont Department of Utilities	Lon D. Wright	7	Fremont, Nebr.

FEA hereby also gives notice of the opportunity for oral and written presentation of data, views, and arguments by interested persons regarded these proposed Prohibition Orders.

The proposed orders would prohibit the above-named powerplants from burning natural gas or petroleum products as their primary energy source.

Prior to issuance of a Prohibition Order to a powerplant, section 2(a) of ESECA and 10 CFR 303.36(b) and 305.3 (b) require that FEA find the powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974. A Prohibition Order may not be issued unless FEA can find that the prohibition of the utilization of natural gas or petroleum products as a primary energy source is practicable and consistent with the purposes of ESECA, that coal and coal transportation facilities will be available during the period the Prohibition Order will be in effect, and that the prohibition will not impair the reliability of service in the area served by the powerplant. FEA's proposed findings, as well as its proposed conclusions and rationale with respect to these findings, for each powerplant are set out in the Appendix to this notice. These findings, conclusions and rationale may be amended as a result of comments received by FEA pursuant to this notice and other information available to FEA. The findings, conclusions and rationale will be included, with any amendments, for each Prohibition Order that is issued.

Upon completion of the proceedings described in this notice, FEA may determine to issue Prohibition Orders to some or all of the above-named powerplants. These Prohibition Orders will not become effective, however, until (1) either (a) the Administrator of the Environmental Protection Agency (EPA) notifies the FEA, in accordance with section 119(d)(1)(B) of the Clean Air Act, that the powerplant is able to burn coal and to comply with all applicable air pollution control requirements without a compliance date extension under section 119(c) of such Act, or (b) if such notification is not given by EPA, the date that the Administrator of EPA certifies, pursuant to section 119(d)(1)(B) of the Clean Air Act, is the earliest date that the powerplant will be able to comply with all applicable air pollution control requirements of section 119 of that Act; and (2) FEA has considered the environmental impact of the order, pursuant to 10 CFR 208.3(a)(4) and 305.9 and has served the affected powerplant with a Notice of Effectiveness, as provided in 10 CFR 303.10(b), 303.37(b) and 305.7. The date the Prohibition Order will be effective will be stated in the Notice of Effectiveness.

10 CFR 305.9 requires that, prior to the issuance of a Notice of Effectiveness to a powerplant, FEA shall perform an analysis of the environmental impact of the issuance of such Notice of Effectiveness. That analysis shall result in either (1) issuance of a declaration that the Prohibition Order will not, if made effective by a Notice of Effectiveness, be likely to have a significant impact on the quality of the human environment; or (2) the preparation by FEA of an environmental impact statement covering significant site-specific impacts that are likely to result from the Prohibition Order and that have not been adequately addressed in the Final Environmental Statement (FES 75–1, dated April 25, 1975) or in other official documents made publicly available. If FEA prepares an environmental impact statement covering significant site-specific impacts resulting from a Prohibition Order, the statement shall be prepared and published for comment in accordance with section 102(2)(C) of the National Environmental Policy Act of 1969 prior to issuance of a Notice of Effectiveness. Interested persons may request a public hearing pursuant to 10 CFR 303.173 to comment on the contents of a draft environmental impact statement. With respect to comments regarding any impact on air quality that might result from a proposed Prohibition Order, however, it should be recognized that ESECA has assigned to EPA the primary responsibility for analyzing the effect of any such order on the Nation's air quality and for determining the applicable air pollution control requirements that apply to the powerplant that has been issued an order. It is expected that, in almost every case, a powerplant to which a Prohibition Order is issued will be eligible to apply to EPA for a compliance date extension. In connection with that application, EPA must provide an opportunity for written comment and oral presentation of data, views and arguments by interested persons. Enclosed with the Notice of Effectiveness may be a compliance reporting schedule to insure that the powerplant will be able to comply with

the prohibition of the burning of natural gas or petroleum products as a primary energy source on the effective date specified in the Notice of Effectiveness.

Public comment on the proposal to issue Prohibitive Orders to the powerplants listed above is invited in the form of written and oral presentation of data, views, and arguments. Comments should relate to the individual docket numbers and should make clear to which docket number the individual comment is addressed.

Comments should address (1) the adequacy and validity of each of the proposed findings and the conclusions and rationale in support of these findings; (2) the environmental impact of the issuance of a Prohibition Order, including any site-specific environmental impacts; and (3) any other aspects or impacts of the proposed Prohibition Order believed to be relevant.

Pursuant to 10 CFR 303.173 (c) and (d), FEA hereby announces that a public hearing to receive oral presentation of data, views and arguments of interested persons will be held beginning at 9 a.m. on May 10 and 11, 1977, in Room 114, Federal Building, 601 E. 12th Street, Kansas City, Missouri 64106. Any person who has an interest in the subject of the hear. , or who is a representative of a group or class of persons which has an interest on the subject of the hearing may make a written request, or a verbal request if confirmed in writing, for an opportunity to make an oral presentation. That request should be directed to Wilbur Jenny, FEA Region VII, 1150 Grand Avenue, Kansas City, Missouri 64106, 816–374–3116. The request should be received before 4.30 p.m., Tuesday, May 3, 1977. The request should describe the person's interest in the issue(s) involved; if appropriate, it should state why the person is an appropriate representative of the group or class of persons which has such an interest; it should give a concise summary of the proposed oral presentation and a phone number where the person may be contacted through May 9, 1977. Speakers will be contacted by an FEA representative before 4.30 p.m., Thursday, May 5, 1977 and should submit ten (10) copies of their oral presentation, if possible, unless such presentation is less than five (5) pages, in which case only one copy is required, to Neil Adams, Regional Administrator, Federal Energy Administration, 1150 Grand Ave., Kansas City, Missouri 64106, before 4:30 p.m., Monday, May 9, 1977.

Detailed technical data, views and arguments should be contained in a written submission in support of the oral presentation. The oral presentation itself should be a summary of those written comments.

While FEA will endeavor to provide adequate opportunity to all who desire to speak, FEA reserves the right to limit the number of persons to be heard at the hearing, to schedule their respective presentations and to establish the procedures governing the conduct of the hearing. The length of time allocated to each presentation may be limited on the basis of the number of persons requesting to be heard. The FEA will prepare an agenda that shall provide, to the extent possible, for the presentation of all relevant data, views and arguments.

An FEA official will be designated to preside at the hearing which will not be a judicial or evidentiary hearing. During oral presentations only those conducting the hearing may ask questions. There will be no cross-examination. At the conclusion of all initial oral presentations, each person who has made an oral statement will be given the opportunity if he or she so desires, to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made and will be subject to time limitations.

Any interested person may submit written questions to the presiding officer to be asked of any person making an oral presentation. The presiding officer will determine whether to ask questions, having first determined whether the question is relevant, and whether adequate time may be afforded for an answer.

Any further procedural rules needed for the proper conduct of the hearing will be announced by the presiding officer.

A transcript of the hearing will be made and it, together with any written comments submitted in the course of the hearing, will be retained by the FFA and made available for inspection and copying at the public reading room located in Room 2107, Federal Building, 12th and Pennsylvania Avenue, NW., Washington, D.C. 20461, and the FEA Regional Office, Library, 1150 Grand Avenue, Kansas City, Missouri 64106, between the hours of 8 a.m. and 4:30 p.m., Monday through Friday. Anyone may purchase a copy of the transcript from the reporter.

Interested persons are invited to submit written comments consisting of data, views, or arguments with respect to these proposed Prohibition Orders to Executive Communications, Federal Energy Administration, Room 3309, Federal Building, 12th and Pennsylvania Avenue, NW., Washington, D.C. 20461.

Comments and other documents submitted to FEA Executive Communications should be identified on the outside of the envelope in which they are transmitted and on the document itself with the designation "Proposed Prohibition Order for the _____ Powerplant." Fifteen copies should be submitted.

All written comments received by 4:30 p.m., Monday, May 30, 1977, all oral presentations, and all other relevant information submitted to or otherwise available to FEA will be considered by FEA prior to issuance of a Prohibition Order.

Any information or data considered to be confidential by the person furnishing it must be so identified and submitted in writing, one copy only. The FEA reserves the right to determine the confidential status of the information or data and to treat it in accordance with that determination.

Copies of the regulations implementing section 2 (a) and (b) of ESECA (10 CFR Parts 303 and 305) are available from the following FEA Regional Offices:

REGION, ADDRESS AND PHONE

I—Robert Mitchell, Regional Administrator, 150 Causeway Street, Room 700, Boston, Massachusetts 02114, 617–223–3701.

II—Alfred Kleinfield, Regional Administrator, 26 Federal Plaza, Room 3206, New York, New York 10007, 212–264–1021.

III—J. A. LaSala, Regional Administrator, 1421 Cherry Street, Room 1001, Philadelphia, Pennsylvania 19102, 215–597–3390.

IV—Donald Allen, Regional Administrator, 1655 Peachtree Street, NE., 8th Floor, Atlanta 30309, 404–526–2837.

V—N. Allen Andersen, Regional Administrator, Federal Office Building, 175 West Jackson Blvd., Room A–333, Chicago, Illinois 60604, 312–353–0540.

VI—Delbert Fowler, Regional Administrator, Post Office Box 35228, 2626 West Mockingbird Lane, Dallas, Texas 75235, 214–749–7345.

VII—Neil Adams, Regional Administrator, 1150 Grand Avenue, Kansas City, Missouri 64106, 816–374–2061.

VIII—Dudley Faver, Regional Administrator, Post Office Box 26247, Belmar Branch, 1075 South Yukon Street, Lakewood, Colorado 80226, 303–234–2420.

IX—William Arntz, Regional Administrator, 111 Pine Street, San Francisco, California 94111, 415–556–7216.

X—Jack B. Robertson, Regional Administrator, 1992 Federal Building, 915 Second Avenue, Seattle, Washington 98174, 206–442–7280.

Any questions regarding this notice should be directed to the FEA National Office as follows: Federal Energy Administration, Code OFU (Prohibition Order: Powerplant), Washington, D.C. 20461, 202–566–7941.

(Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 791 et seq.), as amended by Pub. L. 94–163; Federal Energy Administration Act of 1974 (15 U.S.C. 761 et seq.), as amended by Pub. L. 94–385; E.O. 11790 (39 FR 23185).)

Issued in Washington, D.C., April 25, 1977.

ERIC J. FYGI,
Acting General Counsel,
Federal Energy Administration.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplant named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU–154	Corn Belt Power Cooperative	Wisdom	1	Spencer, Iowa.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to issue a Prohibition Order.

Corn Belt Power Cooperative shall be referred to as the "utility" and as "Corn Belt".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 1 at the Wisdom Generating Station (Wisdom 1) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Corn Belt, in information filed with FEA dated July 8, 1975, indicated that this powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Wisdom 1 is presently burning coal as its primary energy source. Therefore, FEA proposes to find that Wisdom 1 has the necessary plant equipment and facilities associated with the burning of coal.

C. Within the meaning of ESECA and the regulations promulgated pursuant thereto, this powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Wisdom 1 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.* a. *Capital investment costs.* Since Wisdom 1 is currently burning coal as its primary energy source, FEA proposes to find that Wisdom 1 has acquired or modified the equipment and facilities necessary for the burning of coal as its primary energy source, and such actions were not undertaken as a result of (or in contemplation of) the issuance of a Prohibition Order. These acquisitions or modifications either include or should include those necessary for compliance with the requirements of the Clean Air Act.

b. *Annual operating and maintenance costs.* FEA proposes to find that there are no apparent significant increases in operating and maintenance costs that would result from the continued burning of coal by Wisdom 1.

c. *Fuel costs.* The alternate fuel which could be used by Wisdom 1 is natural gas. However, based on information obtained from the Federal Power Commission and from Corn Belt, FEA has determined that Wisdom 1 should continue to experience a substantial curtailment of any future supply of natural gas. FEA, therefore, proposes to find that Wisdom 1 will continue to burn coal as its primary energy source with no increase in fuel costs as a result of a Prohibition Order.

d. *Total annual costs.* FEA proposes to find that there will be no annual increase in costs incurred, at Wisdom 1, as a result of an order which prohibits the burning of natural gas or petroleum products.

2. *Reasonableness of costs.* Considering the fact that FEA has determined that Wisdom 1 should continue to experience curtailment of its alternate fuel, natural gas, as well as the fact that the utility has acquired or modified such equipment and facilities as are necessary in order to burn coal as its primary energy source, FEA proposes to find that the cost of burning coal in lieu of natural gas or petroleum products is reasonable.

3. *Financial capability of Corn Belt Power Cooperative.* FEA assumes that any capital investment costs associated with the acquisitions and modifications necessary for the burning of coal at Wisdom 1 are identified in the utility's current and prospective budgetary plans. FEA proposes to find that the decision by the utility to acquire or modify such equipment and facilities in order to burn coal as a primary energy source at Wisdom 1 was based on an analysis of the financial capability of utility to assume such capital investment costs as well as any additional operating maintenance costs associated with the burning of coal that the utility has concluded that the burning of coal in lieu of petroleum products or natural gas is economically feasible.

4. *Consumer impact.* FEA proposes to find that the issuance of a Prohibition Order to Wisdom 1 should have no material effect on Corn Belt consumers since there will be no significant change in the cost of producing electricity at Wisdom 1 as a result of the continued burning of coal at this powerplant.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Wisdom 1 will discourage the use of natural gas or petroleum products and encourage the continued use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Wisdom 1 would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to this powerplant during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines (BOM) data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves approximately 200 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976 (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*Production (million tons)*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,404

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2 (a) of ESECA is as follows (Coal Availability and Demand: Round I and Round II Coal Conversion Candidates, August 1976, hereafter "Coal Conversion Study"):

Year:	Demand (million tons)
1977	5.4
1978	10.0
1979	13.0
1980	18.0
1981	20.2
1982	41.4
1983	41.4
1984	41.4

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Wisdom 1. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal dry bottom boiler, of the type used at Wisdom 1, is able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU'S/b.	[1] 8,300
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[1] 15
Ash softening temp. (°F)	[1] 2,200
Sulfur (approx.) (percent)	[2] 2.2

[1] Minimum.
[2] Maximum.

b. *Characteristic demand from this powerplant.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1979 and thereafter	94

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Wisdom 1 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	24,139
1978	46,733
1979	92,055
1980	113,447
1981	134,286
1982	141,194
1983	150,591
1984	175,497

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	5,400
1978	10,000
1979	13,000
1980	18,000
1981	20,200
1982	41,400
1983	41,400
1984	41,400

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Wisdom 1 (in a probable regional supply/demand relationship related to the location of this powerplant) from BOM Districts 7 through 20 and 22 as follows:

Year:	Production (thousand tons)
1977	19,491
1978	36,155
1979	68,158
1980	83,700
1981	99,069
1982	104,369
1983	111,665
1984	129,204

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e, above, exceeds the potential demand for coal regardless of characteristic from BOM Districts 7 through 20 and 22 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	4,229
1978	6,270
1979	10,917
1980	14,659
1981	16,363
1982	18,735
1983	18,735
1984	18,735

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand from BOM Districts 7 through 20 and 22 for coal with a 1.81–2.20% sulfur content (which includes the 2.2% maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) percent sulfur 1.81 to 2.20
1977	992
1978	1,955
1979	2,695
1990	2,695
1981	2,695
1982	4,296
1983	4,296
1984	4,296

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 7 through 20 and 22 uncommitted coal production that meets the requirements of Wisdom 1 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Wisdom 1 will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from BOM Districts 7 through 20 and 22. FEA observes, however, that this powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use

of Western Coal by Midwestern and Easterns Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplant and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Wisdom 1 would probably come from BOM District 19 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* The primary route for coal delivery to the Widsom plant would originate on the Union Pacific (UP) Railroad to Council Bluffs, Iowa. Coal is delivered from Council Bluffs to Spencer, Iowa on the Chicago, Milwaukee, St. Paul and Pacific (CMSP&P) via Herndon, Iowa. The total distance is approximately 800 miles.

An alternate route from the primary supply would involve originating on UP to Omaha. Coal would be carried to Sheldon, Iowa by Chicago and North Western (C&NW), and from there to the plant via CMSP&P.

3. *Originating trunk carrier.* The UP, the originator of coal for Widsom 1, has approximately 7,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the UP may need as many as 60 additional cars to handle the demand from Widsom 1. This estimate assumes that the railroad will neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity. The UP indicated that it is willing to acquire any needed capacity involved in shipment to the Widsom facility and that it will modify its expansion plans with demand conditions.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under Section 2(a) of ESECA.

The UP indicated that transportation facilities at those mine sites within BOM District 19 are in satisfactory operating conditions and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and power plant facilities.* The primary and alternate destination carrier for Wisdom 1 is the Chicago, Milwaukee, St. Paul, and Pacific (CMSP&P) Railroad. This company's jurisdiction includes tracks to the plant, and coal is presently being delivered to the plant. The plant has coal unloading facilities, and these are adequate to handle the additional indicated demand through 1985. No construction or refurbishment of these facilities is underway or planned.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery to Wisdom 1 presently exist, and an alternate route is available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission and Corn Belt, FEA purposes to find that the issuance of a Prohibition Order to Wisdom 1 will not impair the reliability of service in the area served by the powerplant since there will be no outage as a result of a Prohibition Order to Wisdom 1.

Corn Belt has advised FEA that Wisdom 1 was designed to burn natural gas or coal and is currently burning coal. There will, therefore, be no impairment of reliability of service within the meaning of ESECA in the area served by Corn Belt as a result of a Prohibition Order.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplant named below. Supporting rational and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-155	Independence Power & Light Department.	Blue Valley	3	Independence, Mo.

These findings, which are now proposed by FEA, are based on information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to issue a Prohibition Order.

Independence Power & Light Department shall be referred to as the "utility" and as "IPLD".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 3 at the Blue Valley Generating Station (Blue Valley 3) had the capability and necesary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. IPLD, in information filed with FEA dated July 9, 1975, indicated that this powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Blue Valley 3 is presently burning coal as its primary energy source. Therefore, FEA proposes to find that Blue Valley 3 has the necessary plant equipment and facilities associated with the burning of coal.

C. Within the meaning of ESECA and the regulations promulgated pursuant thereto this powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Blue Valley 3 in lieu of petroleum products or nautral gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Blue Valley 3 will be operated at a 55 percent capacity factor, has a remaining useful life of 24 years (as of the date of this NOI), is expected to have at least 21 years remaining useful life after conversion of the powerplant, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*—a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Blue Valley 3 are estimated to be approximately $3,046,000 which assumes that an electrostatic precipitator will be required at a cost of $3,046,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate was supplied by the utility.

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $164,000 per year for the operation and maintenance of air pollution control equipment. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled Coal Conversion Cost Reasonableness Analysis For The Blue Valley Plants, March 8, 1977, (hereafter "PEDCo. Report").

c. *Fuel costs.* (i) Based on information supplied by IPLD the price of natural gas available to Blue Valley 3 is approximately $1.05 per million Btu's. This represents $1.05 per MCF of natural gas, assuming 1 million Btu's per MCF.

(ii) Based on information supplied by the Federal Power Commission the price of coal available to Blue Valley 3 is approximately $1.10 per million BTU's. This represents $25.52 per ton of coal, assuming 23.3 million Btu's per ton.

(iii) FEA estimates that the continued burning of coal by this powerplant will result in an increase of approximately $0.05 per million Btu's or $32,377 per year in fuel costs. This estimate is based on fuel consumption presuming Blue Valley is operated with a 55 percent capacity factor and with an average heat rate of 11,200 Btu's per kilowatt hour.

(iv) Based on information supplied by IPLD, FEA has determined that Blue Valley 3 is presently burning coal and should continue to experience a substantial curtail-

ment of any future supply of its alternate fuel, natural gas. FEA, therefore, proposes to find that Blue Valley 3 can continue to burn coal as its primary energy source with a minimal increase in fuel costs as a result of a Prohibition Order.

d. *Total annual costs associated with conversion.* As a result of the conversion of Blue Valley 3 there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $492,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Blue Valley 3 is reasonable. Financial impacts of the conversion will be felt by the utility and by the consumer.

As a result of conversion, the utility will incur additional annual capital investment costs, including financing costs, of approximately $328,000 (this represents an amortized cost over the 21 years remaining useful life of this powerplant after conversion, and is based on a fixed charge rate of 10.8% of the total initial capital investment of $3,046,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $164,000 (these figures are derived from the figures in paragraphs A.1.a., and b.), but will experience an annual increase in fuel costs of approximately $32,000. (See paragraph A.1.c.) The estimated net annual increase of cost of producing electricity at Blue Valley 3 after conversion will be $524,000.

Increased costs for conversion will be mitigated by the decrease in fuel costs. The net result, however, will be an increase in the cost of producing electricity at Blue Valley 3. The cost to the utility resulting from a Prohibition Order ultimately will be recovered in rates.

The use of coal at Blue Valley 3 will result in an estimated annual equivalent savings of 648,000 MCF of natural gas that otherwise would be used in providing steam for electric power generation. The cost of conversion per MCF of natural gas saved is estimated to be $0.81.

Although conversion to the burning of coal would be expected to increase the cost of producing electricity at Blue Valley 3, FEA proposes to find that such increased cost, per MCF of natural gas saved, is not unreasonable. This determination is based on consideration of the substantial savings of natural gas that will result from this conversion. This determination also takes into account the fact that FEA has determined that Blue Valley 3 should continue to experience curtailment of its alternate fuel, natural gas. The determination that the costs of converting are not unreasonable is further supported by consideration of such costs in relation to the expected 21 years remaining useful life of the powerplant after conversion, the size and resources of the utility as examined in the following analysis of financial capability, the nature of the expected operations of this powerplant, and potential future increases in the fuel cost differential in favor of coal.

3. *Financial capabilities of Independence Power and Light Department.*—a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Blue Valley 3 would be economically feasible. FEA's analysis took into consideration the $3,046,000 additional capital investment required for IPLD to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2(a) and (c) of ESECA to IPLD powerplants.

FEA related these additional capital investment costs to IPLD's net property and plant of $45.8 million, the utility's estimate of its 1977–79 construction budget of $19 million, the total capitalization of the utility of $63 million, and the 21 years remaining useful life after conversion of Blue Valley 3. FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financial capabilities of IPLD to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to natural gas attributable to compliance with this NOI would be $492,000. This also represents the total estimated annual incremental increase in revenue requirements of the utility.

(FEA also took into consideration revenue requirements of the utility resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2(a) and (c) of ESECA to IPLD powerplants.) This estimate of $492,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystems Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $388,000 which assumed a predicted effect on IPLD's financial statement and represents revenues required to offset any potential loss in net income as reported for Fiscal Year ending 1975.)

The total estimated annual incerase in costs, exclusive of fuel costs, of $492,000 associated with conversion ultimately will be recovered in rates. However, due to the annual increase in fuel costs of approximately $32,000 attributable to compliance with this NOI, the total annual revenue requirements of IPLD should increase by approximately $524,000. FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financial capabilities of the utility to assume such costs.

4. *Consumer impact.* The potential initial impact of a Prohibition Order to Blue Valley 3 is a net increase in revenues required from IPLD consumers of approximately $0.00096 per kilowatt hour of electricity sold by IPLD. This estimate is based on FEA's analysis of the Ultrasystems Computer Model. The actual amount of the increase will depend on the actual amount of the investment necessary to comply with a Prohibition order, the methods which IPLD selects to finance the increased costs associated with burning coal as a primary energy source at Blue Valley 3, the extent to which the cost increase is spread among IPLD's consumers, the regulations or policies of the regulatory agencies with jurisdiction over IPLD regarding inclusion of such cost increases in consumer rates, the actual amount of the fuel cost differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Blue Valley 3 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Blue Valley 3 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to this powerplant during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines (BOM) data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975)—hereafter "BOM Survey"). Within these recoverable reserves approximately 200 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production, already meets 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond

1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (million tons)
1977	88.4
1978	132.2
1979	237.1
1980	297.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	986
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Order issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976, (hereafter "Coal Conversion Study"):

Year:	Demand (million tons)
1977	5.4
1978	10.0
1979	13.0
1980	18.0
1981	20.2
1982	41.4
1983	41.4
1984	41.4

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Blue Valley 3. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1972 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal wet bottom boiler, of the type used at Blue Valley 3 will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's/lb.	[1] 10,300
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[1] 15
Ash softening temperature (°F)	[1] 10,300
Sulfur (approximately) (percent)	[2] 6.0

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from this powerplant.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1980 and thereafter	152

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a, above, is uncommitted to a specific buyer and will be potentially available to Blue Valley 3 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	15,511
1978	30,521
1979	56,681
1980	69,131
1981	81,867
1982	86,452
1983	92,821
1984	107,352

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under the authority of Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	5,400
1978	10,000
1979	13,000
1980	18,000
1981	20,200
1982	41,400
1983	41,400
1984	41,400

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Blue Valley 3 (in a probable regional supply/demand relationship related to the location of this powerplant) from BOM Districts 7 through 20 and 22 as follows:

Year:	Production (thousand tons)
1977	15,004
1978	29,231
1979	53,016
1980	61,052
1981	71,658
1982	76,033
1983	82,124
1984	95,690

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from BOM Districts 7 through 20 and 22 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	2,898
1978	5,340
1979	7,111
1980	12,016
1981	13,644
1982	33,485
1983	33,485
1984	33,485

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand within BOM Districts 7 through 20 and 22 for coal with a 1.41–6.01 percent sulfur content (which includes the 6.0 percent maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) percent sulfur 1.41 to 6.01
1977	1,143
1978	1,766
1979	1,957
1980	2,880
1981	3,362
1982	3,458
1983	3,458
1984	3,458

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 7 through 20 and 22 uncommitted coal production that meets the requirements of Blue Valley 3 as described in paragraph A.3.a. above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2 (a) of ESECA.

Coal for Blue Valley 3 will probably be bought from producers according to regional supply/demand relationships related to the

powerplant's location from Bureau of Mines Districts 7 through 20 and 22. FEA observes, however, that the powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplant and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Blue Valley 3 would probably come from BOM District 20 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* The primary route for coal delivery to the Blue Valley plant would originate at Salina, Utah on the Denver & Rio Grande Western (D&RGW) Railroad to Pueblo, Colorado (coal is trucked from the mine to the originating point at Salina, Utah). Union Pacific would carry the coal from Pueblo, Colorado to Kansas City, Missouri, where it would be received by the Missouri Pacific and delivered to the plant. The total distance is approximately 550 miles.

An alternate route from the primary supply area would involve originating on the D&RGW from Salina, Utah to Pueblo, Colorado. The Missouri Pacific would then carry the coal to the plant via Kansas City, Mo.

3. *Originating trunk carrier.* The D&RGW, the originator of coal for Blue Valley 3 has approximately 2,500 hopper cars with an estimated average capacity of 90 tons. Using an average number of deliveries of 20 per year per 90-ton car, the D&RGW may need as many as 90 additional cars to handle the demand from Blue Valley 3. This assumes that the railroad would neither have existing excess originating capacity nor obtain cars from other carriers in the originating vicinity. The D&RGW indicated that it is willing to acquire any needed capacity involved in shipment to the Blue Valley facility and that it will modify its expansion plans with demand conditions.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive Orders under Section 2(a) of ESECA.

The D&RGW indicated that transportation facilities at those mine sites within BOM District 20 served by D&RGW are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and power plant facilities.* The primary and alternate destination carrier for Blue Valley 3 is the Missouri Pacific (MP). This company's jurisdiction includes tracks to the plant, and coal deliveries are presently being made on a regular basis by MP. The plant currently has coal unloading facilities.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery to Blue Valley 3 presently exist, and an alternate route is available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Blue Valley 3 will not impair the reliability of service in the area served by the powerplant. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Blue Valley Generating Station is owned by Independence Power and Light Department (IPLD), which is within the geographical area of the Southwest Power Pool regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means the IPLD.

3. The gross capacity, as of September 1, 1976, of all dispatching system powerplants was 285 MW (See line 1, attachment 1.)

4. Proposed changes up to the period in which Blue Valley 3 would implement a Prohibition Order will result in the gross capacity indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Iatan 1	Coal	Add	+726	April 1980.
Totals		Added	+726	

NOTE.—See line 2, attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E–2 dated October 1, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated effective date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Blue Valley 3. FEA assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. A forecast of the peak load for the dispatching system during the period in which Blue Valley 3 would implement a Prohibition Order is as indicated on line 8 of attachment 1.

2. The forecast peak load has been compared with the peak load in a previous similar period. The annual peak load growth rate for these forecasts is 5.4 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the period in which Blue Valley 3 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months is estimated to be required to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplant may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, this projected outage is most likely to occur during the year 1977. The potential loss of capacity from an outage of Blue Valley 3 would be approximately 60 MW (line 7 of attachment 1) which is included in the total outages indicated on line of attachment 1. (The assumed conversion period specified on attachment 1 is shown for the purpose of illustration only.)

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity for the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. A comparison of this net dependable capacity to the forecast peak load shown on line 8 of attachment 1 indicates that the reserve capacity shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of this reserve capacity to the forecast peak load shown on line

8 of attachement 1 results in a reserve margin as indicated on line 11 of attachment 1 (as contrasted with a reserve margin as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers this to be an acceptable reserve margin taking into consideration the geographical location of Blue Valley 3.

5. At the completion of the conversion there will be a net 0.23 MW derating of Blue Valley 3 as a result of using coal as its primary energy source.

E. *Conclusion.* If dispatching system conditions, including any scheduled outage by Blue Valley 3, are as presently forecast during the time required to implement a Prohibition Order by Blue Valley 3, there will be no impairment of reliability of service within the meaning of ESECA in the area served by IPLD or in the dispatching system as a result of the Order.

ATTACHMENT 1

CITY POWER AND LIGHT RELIABILITY DATA—BLUE VALLEY

	Assumed conversion period June 1–July 31, 1980 (megawatt capacity)
1. Gross capacity as of September 1, 1976	285
2. Added capacity	726
3. Gross capacity	1,011
4. Scheduled outages for maintenance	60
5. Projected outages due to prohibition orders	60
6. Maximum projected outages, due to maintenance and prohibition orders (line 4 plus line 5)	120
7. Unit outage	60
8. Peak load summer 1980	330
9. Net dependable capacity	891
10. Reserve capacity	561
11. Reserve margin percent (maintenance and prohibition orders)	170
12 Reserve margin percent (maintenance only)	188

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplants named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-156 OFU-157	St. Joseph Light & Power Co.	Lake Rd.	5 6	St. Joseph, Mo.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

St. Joseph Light & Power Company shall be referred to as the "utility" and as "SJLPC".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplants Number 5 and Number 6 at the Lake Road Generating Station (Lake Road 5 and 6) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. SJLPC in information filed with FEA dated July 10, 1975, indicated that each powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boilers had been designed and constructed or modified to burn coal as their primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Lake Road 5 and 6 are presently burning coal as their primary energy source. Therefore, FEA proposed to find that Lake Road 5 and 6 have the necessary plant equipment and facilities associated with the burning of coal.

C. Within the meaning of ESECA and the regulations promulgated pursuant thereto, these powerplants had the capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Lake Road 5 and 6 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* Since Lake Road 5 and 6 are currently burning coal as their primary energy source, FEA proposes to find that Lake Road 5 and 6 have acquired or modified the equipment and facilities necessary for the burning of coal as their primary energy source, and such actions were not undertaken as a result of (or in contemplation of) the issuance of a Prohibition Order. These acquisitions or modifications either include or should include those necessary for compliance with the requirements of the Clean Air Act.

b. *Annual operating and maintenance costs.* FEA proposes to find that there are no apparent significant increases in operating and maintenance costs that would result from the continued burning of coal by Lake Road 5 and 6.

c. *Fuel costs.* The alternate fuel which could be used by Lake Road 5 and 6 is natural gas. However, based on information obtained from the Federal Power Commission and from SJLPC, FEA has determined that Lake Road 5 and 6 should continue to experience a substantial curtailment of any future supply of natural gas. FEA, therefore, proposes to find that Lake Road 5 and 6 will continue to burn coal as their primary energy source with no increase in fuel costs as a result of a Prohibition Order.

d. *Total annual costs.* FEA proposes to find that there will be no annual increase in costs incurred, at Lake Road 5 and 6, as a result of an order which prohibits the burning of natural gas or petroleum products.

2. *Reasonableness of costs.* Considering the fact that FEA has determined that Lake Road 5 and 6 should continue to experience curtailment of their alternate fuel, natural gas, as well as the fact that the utility has acquired or modified such equipment and facilities as are necessary in order to burn coal as their primary energy source, FEA proposes to find that the cost of burning of coal in lieu of natural gas or petroleum products is reasonable.

3. *Financial capability of St. Joseph Light & Power Company.* FEA assumes that any capital investment costs associated with the acquisitions and modifications necessary for the burning of coal at Lake Road 5 and 6 are identified in the utility's current and prospective budgetary plans. FEA proposes to find that the decision by the utility to acquire or modify such equipment and facilities in order to burn coal as a primary energy source at Lake Road 5 and 6 was based on an analysis of the financial capability of the utility to assume such capital investment costs as well as any additional operating and maintenance costs associated with the use of coal.

FEA, therefore, proposes to find that the utility has concluded that the burning of coal in lieu of petroleum products or natural gas is economically feasible.

4. *Consumer impact.* FEA proposes to find that the issuance of a Prohibition Order to Lake Road 5 and 6 should have no material effect on SJLPC consumers since there will be no significant change in the cost of producing electricity at Lake Road 5 and 6 as a result of the continued burning of coal at these powerplants.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Lake Road 5 and 6 will discourage the use of natural gas or petroleum products and encourage the continued use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for these powerplants to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Lake Road 5 and 6 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to these powerplants during the period until December 31, 1984.*—A. *Coal availability.*

1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines (BOM) data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves approximately 300 billion tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through

1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99% of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976 (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*Production (million tons)*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	*Demand (million tons)*
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and Round II Coal Conversion Candidates, August 1976, hereafter "Coal Conversion Study"):

Year:	*Demand (million tons)*
1977	5.4
1978	10.0
1979	13.0
1980	18.0
1981	20.2
1982	41.4
1983	41.4
1984	41.4

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Lake Road 5 and 6. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for these powerplants.* FEA's "Coal Conversion Study" has determined that pulverized-coal dry bottom and cyclone boilers, of the type used as Lake Road 5 and 6, are able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

	Unit 5	Unit 6
Btu's per pound	10,200 minimum	10,100 minimum.
Moisture	15 pct maximum	15 pct maximum.
Ash	20 pct maximum	18 pct maximum.
Volatile	15 pct maximum	15 pct minimum.
Ash softening temperature	2,900 (°F) minimum	2,900 (°F) maximum.
Sulfur	1.1 pct maximum (approximate)	1.1 pct maximum (approximate).

b. *Characteristic coal demand from these powerplants.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	*Demand (thousand tons)*
1982 and thereafter	861

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Lake Road 5 and 6 in a nationwide market as follows:

Year:	*Production (thousand tons)* Unit 5	Unit 6
1977	18,529	9,594
1978	35,196	21,992
1979	65,842	48,784
1980	81,773	59,008
1981	97,346	72,329
1982	102,537	75,917
1983	109,793	80,619
1984	127,475	96,967

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	*Demand (thousand tons)*
1977	5,400
1978	10,000
1979	13,000
1980	18,000
1981	20,200
1982	41,400
1983	41,400
1984	41,400

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Lake Road 5 and 6 (in a probable regional supply/demand relationship related to the location of these powerplants) from BOM Districts 7 through 20 and 22 as follows:

Year	Production (1,000 tons) Unit 5	Unit 6
1977	16,551	7,901
1978	30,602	17,683
1979	56,253	39,380
1980	70,309	47,219
1981	83,666	57,934
1982	88,149	60,814
1983	94,425	64,590
1984	108,900	77,712

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from BOM Districts 7 through 20 and 22 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	*Demand (thousand tons)*
1977	4,229
1978	8,270
1979	10,917
1980	14,659
1981	16,383
1982	18,735
1983	18,735
1984	18,735

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand from BOM Districts 7 through 20 and 22 for coal with a 1.01–1.40% sulfur content (which includes the 1.1% maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) percent sulfur 1.01 to 1.40
1977	1,483
1978	2,741
1979	3,152
1980	3,283
1981	3,283
1982	3,607
1983	3,607
1984	3,607

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 7 through 20 and 22 uncommitted coal production that meets the requirements of Lake Road 5 and 6 as described in paragraph A.3.a., above.

FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Lake Road 5 and 6 will probably be bought from producers according to regional supply/demand relationships related to the powerplants' locations from BOM Districts 7 through 20 and 22. FEA observes, however, that these powerplants could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal Transportation*—1. *Location of powerplants and coal supply.* Based on an FEA study, Utility Analysis of Coal Transporation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Lake Road 5 and 6 would probably come from BOM District 19 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to these powerplants, complying coal can transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These route were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* The primary route for coal delivery to the Lake Road plant would originate coal on the Union Pacific Railroad (U.P.) to Council Bluffs, Iowa. Burlington Northern would then deliver the coal to the plant in St. Joseph, Missouri. The total distance is approximately 750 miles.

An alternate route from the primary supply area would involve originating on UP through Cheyenne, Wyo., Denver, Colo., and Limon, Colo. to Kansas City, Mo. Delivery to the plant from Kansas City would be made by Burlington Northern.

3. *Originating trunk carrier.* The UP, the originator of coal for Lake Road 5 and 6 has approximately 7,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton car, the UP may need as many as 200 additional cars to handle the demand from Lake Road 5 and 6. This estimate assumes that the railroad will neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity. The UP indicated that it is willing to acquire any needed capacity involved in shipment to the Lake Road facility and that it will modify its expansion plans with demand conditions.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The UP indicated that transportation facilities at those mine sites within BOM District 19 are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* The primary and alternate destination carriers for Lake Road 5 and 6 are the Burlington Northern (BN) or Missouri Pacific (MP). Both the MP's and BN's jurisdiction includes tracks to the plants and the MP is presently delivering coal to the plants. These powerplants presently burn coal. All coal delivery facilities are adequate for the demand anticipated through 1985, and no equipment constraints exist at the plant.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery to Lake Road 5 and 6 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum porducts as their primary energy source will not impair the reliability of service in the area served by the affected powerplants.* Based on an analysis of the information submitted to FEA by the Federal Power Commission and St. Joseph Light & Power Co., FEA proposes to find that the issuance of a Prohibition Order to Lake Road 5 and 6 will not impair the reliability of service in the area served by these powerplants since there will be no outage as a result of a Prohibition Order to Lake Road 5 and 6.

SJLPC has advised FEA that Lake Road 5 and 6 were designed to burn natural gas or coal and are currently burning coal. There will therefore be no impairment of reliability of service within the meaning of ESCEA in the area served by SJLPC as a result of a Prohibition Order.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with respect to the powerplant named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
OFU-150	Fremont Department of Utilities	Lon D. Wright Memorial	7	Fremont, Nebr.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

Fremont Department of Utilities shall be referred to as the "utility" and as "Fremont".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 7 at the Lon D. Wright Memorial Generating Station (Wright 7) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Fremont, in information filed with FEA dated July 10, 1975, indicated that this powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Wright 7 is presently burning coal as its primary energy source. Therefore, FEA proposes to find that Wright 7 has the necessary plant equipment and facilities associated with the burning of coal.

C. Within the meaning of ESECA and the regulations promulgated pursuant thereto, this powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Wright 7 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based on the facts and interpreations stated below:

A. *The buring of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* Since Wright 7 is currently burning coal as its primary energy source, FEA proposes to find that Wright 7 has acquired or modified the equipment and facilities necessary for the burning of coal as its primary energy source, and such actions were not undertaken as a result of (or in contemplation of) the issuance of a Prohibition Order. These acquisitions or modifications either include or should include those necessary for compliance with the requirements of the Clean Air Act.

b. *Annual operating and maintenance costs.* FEA proposes to find that there are no apparent significant increases in operating and maintenance costs that would result from the continued burning of coal by Wright 7.

c. *Fuel costs.* The alternate fuel which could be used by Wright 7 is natural gas. However, based on information obtained from the Federal Power Commission and from Fremont, FEA has determined that Wright 7 should continue to experience a substantial curtailment of any future supply of natural gas. FEA, therefore, proposes to find that Wright 7 will continue to burn coal as its primary energy source with no increase in fuel costs as a result of a Prohibition Order.

d. *Total annual costs.* FEA proposes to find that there will be no annual increase in costs incurred, at Wright 7, as a result of

an order which prohibits the burning of natural gas or petroleum products.

2. *Reasonableness of costs.* Considering the fact that FEA has determined that Wright 7 should continue to experience a curtailment of its alternate fuel, natural gas, as well as the fact that the utility has acquired or modified such equipment and facilities as are necessary in order to burn coal as its primary energy source, FEA proposes to find that the cost of burning coal in lieu of natural gas or petroleum products is reasonable.

3. *Financial capability of Fremont Department of Utilities.* FEA assumes that any capital investment costs associated with the acquisitions and modifications necessary for the burning of coal at Wright 7 are identified in the utility's current and prospective budgetary plans. FEA proposes to find that the decision by the utility to acquire or modify such equipment and facilities in order to burn coal as a primary energy source at Wright 7 was based on an analysis of the financial capability of the utility to assume such capital investment costs as well as any additional operating and maintenance costs associated with the burning of coal.

FEA, therefore, proposes to find that the utility has concluded that the burning of coal in lieu of petroleum products or natural gas is economically feasible.

4. *Consumer impact.* FEA proposes to find that the issuance of a Prohibition Order to Wright 7 should have no material effect on Fremont consumers since there will be no significant change in the cost of producing electricity at Wright 7 as a result of the continued burning of coal at this powerplant.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Wright 7 will discourage the use of natural gas or petroleum products and encourage the continued use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Wright 7 would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to this powerplant during the period until December 31, 1984.*—A. *Coal availability.* 1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines (BOM) data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves, approximately 200 billions tons contain 1 percent or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal prdoucing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansion plans that extend that far into the future; however, the projected total national coal production for 1985 already meets 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	Production potential (million tons)
1977	732.8
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An FEA study, Availability of Potential Coal Supply Through 1985, by Quality Characteristics, August 1976 (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	Production (million tons)
1977	48.4
1978	122.2
1979	237.1
1980	287.8
1981	344.0
1982	383.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and Round II Coal Conversion Candidates, August 1976 (hereafter "Coal Conversion Study")):

Year:	Demand (million tons)
1977	5.4
1978	10.0
1979	13.0
1980	18.0
1981	20.2
1982	41.4
1983	41.4
1984	41.4

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Wright 7. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which is not now committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal wet bottom boiler, of the type used at Wright 7, is able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's a/lb	[1] 9,900
Moisture (percent)	[2] 15
Ash (percent)	[2] 20
Volatile (percent)	[2] 15
Ash softening temp. (°F)	[1] 2,900
Sulfur (approximately) (percent)	[2] 1.3

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from this powerplant.* The potential demand for coal, of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1982 and thereafter	927

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Wright 7 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	9,594
1978	21,993
1979	48,786
1980	59,010
1981	72,382
1982	75,920
1983	86,622
1984	96,071

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under the authority of Section 2(a) of ESECA. National ESECA Prohibition Order demand as previously stated in paragraph A.2.c., above, is:

Year:	Demand (thousand tons)
1977	5,400
1978	10,000
1979	13,000
1980	18,000
1981	20,200
1982	41,400
1983	41,400
1984	41,400

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Wright 7 (in a probable regional supply/demand relationship related to the location of this powerplant) from BOM Districts 7 through 20 and 22 as follows:

Year:	Production (thousand tons)
1977	7,901
1978	17,684
1979	39,832
1980	47,221
1981	57,937
1982	60,817
1983	64,593
1984	77,716

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.e., above, exceeds the potential demand for coal regardless of characteristic from BOM Districts 7 through 20 and 22 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	4,229
1978	8,270
1979	10,917
1980	14,659
1981	16,383
1982	18,735
1983	18,735
1984	18,735

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand from BOM Districts 7 through 20 and 22 for coal with a 1.01–1.40 percent sulfur content (which includes the 1.3 percent maximum sulfur content as described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) Sulfur 1.01 to 1.4
1977	1,482
1978	2,741
1979	3,152
1980	3,283
1981	3,283
1982	3,607
1983	3,607
1984	3,607

The regional planned production of coal, stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds the potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction or utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines Districts 7 through 20 and 22 uncommitted coal production that meets the requirements of Wright 7 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA. Coal for Wright 7 will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from BOM Districts 7 through 20 and 22. FEA observes, however, that this powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Mid-western and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplants and coal supply.* Based on an FEA study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Wright 7 would probably come from Bureau of Mines (BOM) District 19 as both the primary and alternate source of supply. While this supply area is the nearest available potential source able to supply complying coal to this powerplant, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as an alternate route. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* The primary route for coal delivery to the Wright 7 would originate coal on the Union Pacific (UP) to Fremont, Nebraska. The coal would be delivered to the plant by the Chicago and North Western (C&NW). The total distance is approximately 700 miles.

An alternate route from the primary supply area would involve originating on the UP to Brush, Colo. The Burlington Northern (BN) would bring the coal to Fremont. C&NW would make the final delivery.

3. *Originating trunk carrier.* The UP, the originator of coal for Wright 7, has approximately 7,000 hopper cars with an estimated average capacity of 85 tons. Using an average number of deliveries of 20 per year per 85-ton, the UP may need as many as 40 additional cars to handle the demand from Wright 7. This assumes that the railroad will neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity. The UP indicated that it is willing to acquire any needed capacity involved in shipment to the Wright 7 and that it will modify its expansion plans with demand conditions.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

The UP indicated that transportation facilities at those mine sites within BOM District 19 are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate or intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* The Chicago and North Western is the destination carrier for the Wright 7. The C&NW owns the railroad siding into the plant. At present the C&NW delivers coal to Wright 7. The plant has adequate unloading equipment to handle the coal deliveries. This equipment is presently in operating condition, and is being used to unload coal.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no significant constraints to coal delivery to Wright 7 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission and Fremont, FEA proposes to find that the issuance of a Prohibition Order to Wright 7 will not impair the reliability of service in the area served by the powerplant since there will be no outage as a result of a Prohibition Order to Wright 7.

The Fremont Department of Utilities has advised FEA that Wright 7 was designed to burn gas and coal and is currently burning coal. There will therefore be no impairment of reliability of service within the meaning of ESECA in the area served by Wright 7 as a result of a Prohibition Order.

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ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

Intention To Issue Prohibition Orders to Certain Powerplants

The Federal Energy Administration (FEA) hereby gives notice of its intention to issue a Prohibition Order, pursuant to the authorities granted it by Section 2 (a) and (b) of the Energy Supply and Environmental Coordination Act of 1974, as amended (ESECA), and Chapter 10, Code of Federal Regulations (10 CFR), Parts 303 and 305 to the following powerplant:

Docket No.	Owner	Generating station	Unit No.	Location
OFU-139	Philadelphia Electric Co.	Cromby	2	Phoenixville, Pa.

FEA hereby also gives notice of the opportunity for oral and written presentation of data, views, and arguments by interested persons regarding this proposed Prohibition Order.

The proposed order would prohibit the above-named powerplant from burning natural gas or petroleum products as its primary energy source.

Prior to issuance of a Prohibition Order to a powerplant, section 2(a) of ESECA and 10 CFR 303.36(b) and 305.3 (b) require that FEA find that the powerplant had the capability and necessary plant equipment to burn coal as of June 22, 1974. A Prohibition Order may not be issued unless FEA can find that the prohibition of the utilization of natural gas or petroleum products as a primary energy source is practicable and consistent with the purposes of ESECA, that coal and coal transportation facilities will be available during the period the Prohibition Order will be in effect, and that the prohibition will not impair the reliability of service in the area served by the powerplant. FEA's proposed findings, as well as its proposed conclusions and rationale with respect to these findings, for each powerplant are set out in the Appendix to this notice. These findings, conclusions and rationale may be amended as a result of comments received by FEA pursuant to this notice and other information available to FEA. The findings, conclusions and rationale will be included, with any amendments, for each Prohibition Order that is issued.

Upon completion of the proceedings described in this notice, FEA may determine to issue a Prohibition Order to the above-named powerplant. This Phohibition Order will not become effective, however, until (1) either (a) the Administrator of the Environmental Protection Agency (EPA) notifies the FEA, in accordance with section 119(d)(1)(B) of the Clean Air Act, that the powerplant is able to burn coal and to comply with all applicable air pollution control requirements without a compliance date extension under section 119(c) of such Act, or (b) if such notification is not given by EPA, the date that the Administrator of EPA certifies, pursuant to section 119(d)(1)(B) of the Clean Air Act, is the earliest date that the powerplant will be able to comply with all applicable air pollution control requirements of section 119 of that Act, and (2) FEA has considered the environmental impact of the order, pursuant to 10 CFR 208.3(a)(4) and 305.9, and has served the affected powerplant with a Notice of Effectiveness, as provided in 10 CFR 303.10(b), 303.37(b) and 305.7. The date the Prohibition Order will be effective will be stated in the Notice of Effectiveness.

10 CFR 305.9 requires that, prior to the issuance of a Notice of Effectiveness to a powerplant, FEA shall perform an analysis of the Environmental impact of the issuance of such Notice of Effectiveness. That analysis shall result in either (1) issuance of a declaration that the Prohibition Order will not, if made effective by issuance of a Notice of Effectiveness, be likely to have a significant impact on the quality of the human environment, or (2) the preparation by FEA of an environmental impact statement covering significant site-specific impacts that are likely to result from the Prohibition Order and that have not been adequately addressed in the Final Environmental Statement (FES 75-1, dated April 25, 1975) or in other official documents made publicly available.

If FEA prepares an environmental impact statement covering significant site-specific impacts resulting from a Prohibition Order, the statement shall be prepared and published for comment in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969 prior to issuance of a Notice of Effectiveness. Interested persons may request a public hearing pursuant to 10 CFR 303.173 to comment on the contents of a draft environmental impact statement. With respect to comments regarding any impact on air quality that might result from a proposed Prohibition Order, however, it should be recognized that ESECA has assigned to EPA the primary responsibility for analyzing the effect of any such order on the Nation's air quality and for determining the applicable air pollution control requirements that apply to the powerplant that has been issued an order. It is expected that, in almost every case, a powerplant to which a Prohibition Order is issued will be eligible to apply to EPA for a compliance date extension. In connection with that application, EPA must provide an opportunity for written comment and oral presentation of data, views and arguments by interested persons. Enclosed with the Notice of Effectiveness may be a compliance reporting schedule to insure that the powerplant will be able to comply with the prohibition of the burning of natural gas or petroleum products as a primary energy source on the effective date specified in the Notice of Effectiveness.

Public comment on the proposal to issue a Prohibition Order to the powerplant listed above is invited in the form of written and oral presentation of data, views and arguments.

Comments should address (1) the adequacy and validity of each of the proposed findings and the conclusions and rationale in support of these findings, (2) the environmental impact of the issuance of a Prohibition Order, including any site-specific environmental impacts, and (3) any other aspects of impacts of the proposed Prohibition Order believed to be relevant.

Pursuant to 10 CFR 303.173 (c) and (d), FEA hereby announces that a public hearing to receive oral presentation of data, views and arguments of interested persons will be held beginning at 9:00 a.m. on May 10, 1977, in Conference Room 11B, 1421 Cherry Street, Philadelphia, Pennsylvania 19102. Any person who has an interest in the subject of the hearing or who is a representative of a group or class of persons which has an interest in the subject of the hearing may make a written request or a verbal request if confirmed in writing, for an opportunity to make an oral presentation. That request should be directed to Ed Gray, FEA Region III, Room 1001, 1421 Cherry Street, Philadelphia, Pennsylvania 19102, (215) 597-3607. The request should be received before 4:30 p.m., Tuesday, May 3, 1977. The request should describe the person's interest in the issue(s) involved; if appropriate, it should state why the person is an appropriate representative of the group or class of persons which has such an interest; it should give a concise summary of the proposed oral presentation and a phone number where the person may be contacted through May 9, 1977. Speakers will be contacted by an FEA representative before 4:30 p.m., Thursday, May 5, 1977, and should submit ten (10) copies of their oral presentation, if possible, unless such presentation is less than five (5) pages, in which case only one copy is required, to Ed Gray, Federal Energy Administration, Room 1001, 1421 Cherry Street, Philadelphia, Pennsylvania 19102, before 4:30 p.m., Monday, May 9, 1977.

Detailed technical data, views, and arguments should be contained in a written submission in support of the oral presentation. The oral presentation itself should be a summary of those written comments.

While FEA will endeavor to provide adequate opportunity to all who desire to speak, FEA reserves the right to limit the number of persons to be heard at the hearing, to schedule their respective presentations and to establish the procedures governing the conduct of the hearing. The length of time allocated to each presentation may be limited on the basis of the number of persons requesting to be heard. The FEA will prepare an agenda that shall provide, to the extent possible, for the presentation of all relevant data, views, and arguments.

An FEA official will be designated to preside at the hearing which will not be a judicial or evidentiary hearing. During oral presentations only those conducting the hearing may ask questions. There will be no cross-examination. At the conclusion of all initial oral presentations, each person who has made an oral statement will be given the opportunity, if he or she so desires, to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made and will be subject to time limitations.

Any interested person may submit written questions to the presiding officer to be asked of any person making an oral presentation. The presiding officer will determine whether to ask questions, having first determined whether the question is relevant, and whether adequate time may be afforded for an answer.

Any further procedural rules needed for the proper conduct of the hearing will be announced by the presiding officer.

A transcript of the hearing will be made and it, together with any written comments submitted in the course of the hearing, will be retained by the FEA and made available for inspection and copy-

ing at the public reading room located in Room 2107, Federal Building, 12th & Pennsylvania Avenue, N.W., Washington, D.C. 20461, and the FEA Regional Office, Room 1001, 1421 Cherry Street, Philadelphia, Pennsylvania 19102, between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday. Anyone may purchase a copy of the transcript from the reporter.

Interested persons are invited to submit written comments consisting of data, views, or arguments with respect to this proposed Prohibition Order to Executive Communications, Box MC, Federal Energy Administration, Federal Building, Room 3309, 12th & Pennsylvania Avenue, N.W., Washington, D.C. 20461.

Comments and other documents submitted to FEA Executive Communications should be identified on the outside of the envelope in which they are transmitted and on the document itself with the designation "Proposed Prohibition Order for the Cromby Powerplant." Fifteen copies should be submitted.

All written comments received by 4:30 p.m., Monday, May 30, 1977, all oral presentations, and all other relevant information submitted to or otherwise available to FEA will be considered by FEA prior to issuance of a Prohibition Order.

Any information or data considered to be confidential by the person furnishing it must be so identified and submitted in writing, one copy only. The FEA reserves the right to determine the confidential status of the information or data and to treat it in accordance with that determination.

Copies of the regulations implementing section 2(a) and (b) of ESECA (10 CFR Parts 308 and 305) are available from the following FEA Regional Offices:

REGION, ADDRESS AND PHONE

I. Robert Mitchell, Regional Administrator, 150 Causeway Street, Room 700, Boston, Massachusetts 02113—617-223-3701.

II. Alfred Kleinfeld, Regional Administrator, 26 Federal Plaza, Room 3206, New York, New York 10007—212-264-1021.

III. J.A. LaSala, Regional Administrator, 1421 Cherry Street, Room 1001, Philadelphia, Pennsylvania 19102—215-597-3390.

IV. Donald Allen, Regional Administrator, 1655 Peachtree Street, N.E., 8th Floor, Atlanta, Georgia 30309—404-526-2837.

V. N. Allen Andersen, Regional Administrator, Federal Office Building, 175 West Jackson Blvd., Room A-333, Chicago, Illinois 60604—312-353-0340.

VI. Delbert Fowler, Regional Administrator, Post Office Box 35228, 2626 W. Mockingbird Lane, Dallas, Texas 75235—214-749-7845.

VII. Neil Adams, Regional Administrator, 1150 Grand Avenue, Kansas City, Missouri 64106—816-374-2061.

VIII. Dudley Faver, Regional Administrator, Post Office Box 26247, Belmar Branch, 1075 South Yukon Street, Lakewood, Colorado 80226—303-234-2420.

IX. William Arntz, Regional Administrator, 111 Pine Street, San Francisco, California 94111—415-556-7216.

X. Jack B. Robertson, Regional Administrator, 1992 Federal Building, 915 Second Avenue, Seattle, Washington 98174—206-442-7200.

Any questions regarding this Notice should be directed to the FEA National Office as follows: Federal Energy Administration, Code GCU (Prohibition Order: Cromby Powerplant), Washington, D.C. 20461, 202-566-7951.

(Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 791 *et seq.*), as amended by Pub. L. 94-163; Federal Energy Administration Act of 1974 (15 U.S.C. 761 *et seq.*), as amended by Pub. L. 94-385; E.O. 11790 (39 FR 23185).)

Issued in Washington, D.C., April 25, 1977.

ERIC J. FYGI,
Acting General Counsel,
Federal Energy Administration.

APPENDIX

PROPOSED FINDINGS AND RATIONALE FOR NOTICE OF INTENTION TO ISSUE A PROHIBITION ORDER

ESECA and the FEA regulations require FEA to make certain findings and to consider certain factors before issuing a Prohibition Order to a powerplant. FEA's proposed findings are set out below with repect to the powerplant named below. Supporting rationale and conclusions are also set forth.

Docket No.	Owner	Generating station	Unit No.	Location
0FU-190	Philadelphia Electric Co.	Cromby	2	Phoenixville, Pa.

These findings, which are now proposed by FEA, are based on the information that has been provided to and developed by FEA prior to the issuance of this Notice of Intention (NOI) to Issue a Prohibition Order.

Philadelphia Electric Company shall be referred to as the "utility" and as "Philadelphia Electric".

I. *Capability and necessary plant equipment to burn coal.* FEA proposes to find that on June 22, 1974, Powerplant Number 2 at the Cromby Generating Station (Cromby 2) had the capability and necessary plant equipment to burn coal. This proposed finding is based on the facts and interpretations stated below:

A. Philadelphia Electric in information filed with FEA dated July 10, 1975, indicated that the powerplant had in place on June 22, 1974, a boiler that was capable of burning coal. The boiler had been designed and constructed or modified to burn coal as its primary energy source, notwithstanding the fact that on June 22, 1974, the powerplant may not have been burning coal as its primary energy source.

B. Based on information Philadelphia Electric filed with FEA dated July 10, 1975, and other information available to FEA, the following plant equipment or facilities at Cromby 2 would have to be acquired or refurbished in order for this powerplant to burn coal as its primary energy source: (1) Coal burners and mills, (2) ash handling system, (3) superheater tube shields, and (4) combustion controls.

C. FEA proposes to find that on June 22, 1974, Cromby 2 had all other significant plant equipment and facilities associated with the burning of coal.

D. Within the meaning of ESECA and the regulations promulgated pursuant thereto, the equipment and facilities listed in paragraph B, above, do not individually or in combination constitute a lack of capability and necessary plant equipment to burn coal as of June 22, 1974.

II. *The burning of coal in lieu of natural gas or petroleum products is practicable and consistent with the purposes of ESECA.* FEA proposes to find that the burning of coal at Cromby 2 in lieu of petroleum products or natural gas is practicable and consistent with the purposes of ESECA. This finding is based upon the presumption that Cromby 2 will be operated at a 64 percent capacity factor, has a remaining useful life of 14 years (as of the date of this NOI), is expected to have at least 9 years remaining useful life after conversion of the powerplant, and on the facts and interpretations stated below:

A. *The burning of coal is practicable.*—1. *Costs associated with burning coal.*

a. *Capital investment costs.* The total initial capital investment costs, exclusive of financing costs, that would result from the acquisition and refurbishment of equipment and facilities associated with the burning of coal at Cromby 2 are estimated to be approximately $20,396,000, which assumes that flue gas desulfurization equipment (including venturi scrubber) will be required at a cost of $20,342,000 to comply with the air pollution control requirements of the Clean Air Act. This estimate is based on a PEDCo-Environmental Specialists, Inc. report entitled Coal Conversion Cost Reasonableness Analysis for the Cromby 2 Plant, Feb. 25, 1977 (hereafter "PEDCo. Report").

b. *Annual operating and maintenance costs.* The increase in operating and maintenance costs, exclusive of fuel costs, that would result from the burning of coal is estimated to be approximately $10,284,000 per year including $8,857,000 for operation and maintenance of air pollution control equipment. This estimate is based on the PEDCO. Report.

c. *Fuel costs.* (i) Based on information supplied by Philadelphia Electric, the price of petroleum products available to Cromby 2 is approximately $2.45 per million Btu's for oil. This represents $14.60 per barrel of oil, assuming 5.96 million Btu's per barrel.

(ii) Based on information supplied by PEDCo-Environmental Specialists, Inc. the price of coal available to Cromby 2 is approximately $1.08 per million Btu's. This represents $26.78 per ton of coal, assuming 24.8 million Btu's per ton.

(iii) FEA estimates that the burning of coal by this powerplant will result in a reduction of approximately $1.37 per million Btu's, or $15,021,000 per year in fuel costs. This estimate is based on fuel consumption presuming Cromby 2 is operated at a 64 percent capacity factor and with an average heat rate of 9,789 Btu's per kilowatt hour.

d. *Total annual costs associated with conversion.* As a result of the conversion of Cromby 2, there will be an estimated total annual increase in costs incurred, exclusive of fuel costs, of approximately $16,184,000.

2. *Reasonableness of costs of conversion.* The foregoing analysis of the costs of conversion provides the basis for deciding whether the conversion of Cromby 2 is reasonable. Financial impacts of the conversion

will be felt by the utility and by the consumer.

As a result of conversion, the utility will incure additional annual capital investment costs, including financing costs, of approximately $5,900,000 (this represents an amortized cost over the 9 years remaining useful life of this powerplant after conversion, and is based on a fixed charge rate of 28.9% of the total initial capital investment of $20,396,000) and additional annual operating and maintenance costs, exclusive of fuel costs, of approximately $10,284,000 (these figures are derived from the figures in paragraphs A.1. a., and b.), but will experience an annual fuel cost savings of approximately $15,021,000. (See paragraphs A.1.c.) The estimated net annual increase in cost of producing electricity at Cromby 2 after conversion will be $1,163,000.

Increased costs for conversion will be mitigated by the decrease in fuel costs. The net result, however, will be in an increase in the cost of producing electricity at Cromby 2. The costs to the utility resulting from this Prohibition Order ultimately will be recovered in rates.

The use of coal at Cromby 2 will result in an estimated annual equivalent savings of 1,844,000 barrels of oil that otherwise would be used in providing steam for electric power generation. The cost of conversion per barrel of oil saved is estimated to be $0.63.

Although conversion to the burning of coal would be expected to increase the cost of producing electricity at Cromby 2, FEA proposes to find that such increased cost, per barrel of oil saved, is not unreasonable. This determination is based on consideration of the substantial savings of oil that will result from this conversion. The determination that the costs of converting are not unreasonable is further supported by consideration of such costs in relation to the expected 9 years remaining useful life of the powerplant after conversion, the size and resources of Philadelphia Electric as examined in the following analysis of financial capability, the nature of the expected operations of this powerplant, and potential future increases in the fuel cost differential in favor of coal.

3. *Financial capabilities of Philadelphia Electric.* a. *Recovery of capital investment.* FEA proposes to find that compliance with a Prohibition Order to Cromby 2 would be economically feasible. FEA's analysis took into consideration the $20,396,000 additional capital investment required for Philadelphia Electric to comply with this NOI and all other NOI's which are currently under consideration, as well as additional capital investment costs related to all other Notices of Intention, to date, if any, to issue prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Philadelphia Electric powerplants. FEA related these additional capital investment costs to Philadelphia Electric's estimate of its 1977–79 construction budget of $2 billion, the total capitalization of Philadelphia Electric of $3.5 billion, and the 9 years remaining useful life after conversion of Cromby 2.

FEA does not consider the effect of this added capital investment cost to represent an unreasonable burden given the financial capabilities of the utility to assume such costs.

b. *Total annual costs associated with conversion.* The total estimated annual increase in costs (amortized increased capital investment costs and other costs, exclusive of fuel costs) associated with the burning of coal as opposed to oil attributable to compliance with this NOI and all other NOI's which are currently under consideration would be $16,184,000. This also represents the total estimated annual incremental increase in revenue requirements of Philadelphia Electric. (FEA also took into consideration revenue requirements of Philadelphia Electric resulting from compliance with all other Notices of Intention, to date, if any, to issue Prohibition or Construction Orders, and from all outstanding Prohibition or Construction Orders, if any, issued to date under authority of Section 2 (a) and (c) of ESECA to Philadelphia Electric powerplants.) This estimate of $16,184,000 in revenue requirements is based on an investment oriented analysis described in an Ultrasystems Inc. report entitled Computer Methodology For Coal Conversion Cost Reasonableness Determination, August 1976, (hereafter "Ultrasystems Computer Model"). The estimate includes an incremental rate of return on retained earnings which are invested.

(For comparison with the Ultrasystem Computer Model results, FEA performed a financial analysis based on a Price Waterhouse and Co. report entitled Identification Of Possible Financial Effects Of Converting Certain Electric Generating Facilities To The Use Of Coal, October 1976. This analysis estimated the total annual incremental increase in revenue requirements to be $16,320,000, which assumed a predicted effect on Philadelphia Electric's financial statement and represents revenues required to offset any potential loss in Philadelphia Electric's net earnings per share as reported for Fiscal Year ending 1975.)

The total estimated annual increase in costs of $16,184,000 associated with conversion ultimately will be recovered in rates. However, due to the potential offsetting value of fuel cost savings of approximately $15,021,000 attributable to compliance with this NOI and all other NOI's currently under consideration, the net annual revenue requirements of Philadelphia Electric should increase by approximately $1,163,000.

4. *Consumer Impact.* The potential initial impact of a Prohibition Order to Cromby 2 is a net increase in revenues required from Philadelphia Electric consumers of approximately $0.00046 per kilowatt hour of electricity sold by Philadelphia Electric. This estimate is based on FEA's analysis of the Ultrasystems Computer Model.

The actual amount of the increase will depend on the actual amount of the investment necessary to comply with a Prohibition Order, the methods which Philadelphia Electric selects to finance the increased cost associated with burning coal as a primary energy source at Cromby 2, the extent to which the cost increase is spread among Philadelphia Electric consumers, the regulations or policies of the regulatory agencies with jurisdiction over Philadelphia Electric regarding inclusion of such cost increases in consumer rates, the actual amount of the fuel differential, and other factors.

B. *Consistency with the purposes of ESECA.* Because the issuance of a Prohibition Order to Cromby 2 will discourage the use of natural gas or petroleum products and encourage the increased use of coal, FEA proposes to conclude that this action would be consistent with the purpose of ESECA to provide a means to assist in meeting the essential needs of the United States for fuels.

On the basis of the environmental analysis which FEA is required to conduct prior to issuance of a Notice of Effectiveness of a Prohibition Order, as well as the necessity for this powerplant to comply with the Clean Air Act and other applicable environmental protection requirements, FEA proposes to conclude that a Prohibition Order to Cromby 2 would be consistent with the purpose of ESECA to provide for a means to assist in meeting the essential needs of the United States for fuels in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect and improve the environment.

III. *Coal and coal transportation facilities will be available to this powerplant during the period until December 31, 1984.*

A. *Coal availability.*—1. *National coal reserves.* United States coal reserves are more than sufficient to supply national needs for the foreseeable future. U.S. Department of the Interior, Bureau of Mines data show a demonstrated coal reserve base of over 400 billion tons, over half of which is currently technically and economically recoverable, (Demonstrated Coal Reserve Base of the United States, by Sulfur Category, on January 1, 1974, Bureau of Mines (May 1975) [hereafter "BOM Survey"]). Within these recoverable reserves approximately 200 billion tons contain 1% or less sulfur by weight. To determine when certain quantities of these reserves are expected to be available, FEA has examined several studies, referenced herein, which together provide the best current evidence as to coal availability for the period ending December 31, 1984.

2. *National coal production and demand.* The comparison, stated below, of estimated national coal production, national coal demand, and the total tonnages of uncommitted planned national coal production (derived from responses to a survey of coal producing companies) shows that there should be sufficient production of coal to meet the total national demand through 1980. Beyond 1980, plans for new production are not yet fully developed because few coal producers have firm expansions plans that extend that far into the future; however, the projected total planned national coal production for 1985 already meets 99 percent of the total U.S. demand expected in 1985. With time, more potential mine developments will become firm plans, thus increasing the planned production.

a. *National coal production.* It is conservatively estimated that it will be practicable to produce coal nationally in at least the following quantities:

Year:	*Production potential (million tons)*
1977	732.3
1978	791.6
1979	851.4
1980	911.7
1981	960.0
1982	994.3
1983	1,017.4
1984	1,028.7
1985	1,029.6

The figures shown above are derived from FEA's Coal Mine Expansion Study (May 1976). This study demonstrates that most coal producers did not have firm or accurate plans for new capacity additions beyond 1980. The 1985 projection, therefore, tends to underestimate actual production potential.

An EPA study, Availability of Potential Coal Supply Through 1985 by Quality Characteristics, August 1976, (hereafter "Availability Study"), indicates current plans for nationwide production of uncommitted coal as follows:

Year:	*Production (million tons)*
1977	48.4
1978	122.2
1979	237.1
1980	287.3
1981	344.0
1982	363.9
1983	390.1
1984	469.5
1985	544.9

b. *National demand exclusive of ESECA prohibition order demand.* The estimated national demand, excluding any increased demand resulting from FEA action under the authority of Section 2(a) of ESECA, is as follows (FEA 1976 National Energy Outlook):

Year:	Demand (million tons)
1977	698
1978	730
1979	764
1980	799
1981	842
1982	887
1983	935
1984	985
1985	1,040

c. *National ESECA prohibition order demand.* The estimated potential demand for coal resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA is as follows (Coal Availability and Demand: Round I and II Coal Conversion Candidates, August 1976 (hereafter "Coal Conversion Study")):

Year:	Demand (million tons)
1977	4.5
1978	9.1
1979	12.0
1980	17.0
1981	19.2
1982	27.6
1983	27.6
1984	27.6

3. *Characteristic coal, production and demand.* FEA's "Availability Study" identifies coal of specific quality characteristics available for use at Cromby 2. The survey is based on data from 31 mining companies that supplied useful information on 96 mining units. Responses from these companies identified planned production of coal which was not committed to a specific buyer. For those companies which did not respond to the survey, FEA estimated their uncommitted planned production based on their 1974 production.

a. *Characteristic coal requirements for this powerplant.* FEA's "Coal Conversion Study" has determined that a pulverized-coal, dry bottom boiler of the type used at Cromby 2 will be able to burn coal of the following characteristics and comply with all applicable air pollution control requirements:

BTU's/lb	[1] 13,100
Moisture (percent)	[2] 15
Ash (percent)	[2] 19
Volatile (percent)	[1] 15
Ash softening temperature (°F)	[1] 2,200
Sulfur (approximate) (percent)	[2] 2.7

[1] Minimum.
[2] Maximum.

b. *Characteristic coal demand from this powerplant.* The potential demand for coal of the type described above, which would result from this NOI is estimated to be as follows:

Year:	Demand (thousand tons)
1982 and thereafter	443

c. *National planned production, characteristic coal.* The FEA "Coal Conversion Study" has determined that coal of the type described in paragraph A.3.a., above, is uncommitted to a specific buyer and will be potentially available to Cromby 2 in a nationwide market as follows:

Year:	Production (thousand tons)
1977	13,258
1978	26,667
1979	50,263
1980	58,353
1981	69,045
1982	72,867
1983	77,854
1984	94,105

d. *National ESECA prohibition order demand for coal, regardless of characteristics.* The national planned production of characteristic coal, as stated in paragraph A.3.c., above, exceeds potential demand for coal regardless of characteristic expected from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. National ESECA Prohibition Order demand as stated in paragraph A.2.c., above is:

Year:	Demand (thousand tons)
1977	4,500
1978	9,100
1979	12,000
1980	17,000
1981	19,200
1982	27,600
1983	27,600
1984	27,600

e. *Regional planned production, characteristic coal.* Coal with the characteristics described in paragraph A.3.a., above, is uncommitted and will be potentially available to Cromby 2 (in a probable regional supply/demand relationship related to the location of this powerplant) from Bureau of Mines Districts 1 through 15 as follows:

Year:	Production (thousand tons)
1977	13,258
1978	26,667
1979	50,263
1980	58,353
1981	69,045
1982	72,867
1983	77,854
1984	94,105

f. *Regional ESECA prohibition order demand for coal, regardless of characteristic.* The expected regional production of characteristic coal, as stated in paragraph A.3.a., above, exceeds the potential demand for coal regardless of characteristic from Bureau of Mines Districts 1 through 15 expected to result from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA. This potential regional demand is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons)
1977	2,877
1978	5,256
1979	7,027
1980	11,932
1981	14,138
1982	22,179
1983	22,179
1984	22,179

g. *Regional ESECA prohibition order demand for coal by sulfur characteristic.* The potential regional demand for coal from BOM Districts 1 through 15 with a 2.21–2.71 percent sulfur content (which includes the 2.7 percent maximum sulfur content described in paragraph A.3.a., above) resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of section 2(a) of ESECA is estimated in FEA's "Coal Conversion Study" as follows:

Year:	Demand (thousand tons) percent sulfur 2.21 to 2.71
1977	508
1978	807
1979	1,242
1980	1,563
1981	1,733
1982	5,519
1983	5,519
1984	5,519

The regional planned production of coal stated in paragraph A.3.e., above, with the characteristics described in paragraph A.3.a., above, far exceeds this potential ESECA regional demand for coal by sulfur characteristic.

4. *State or local laws.* FEA has found no state or local laws or policies limiting the extraction of utilization of coal that would adversely affect these production figures, and none have been brought to FEA's attention.

5. *Conclusion.* FEA's "Availability Study" has identified nationally and in Bureau of Mines District 1 through 15 uncommitted coal production that meets the requirements of Cronby 2 as described in paragraph A.3.a., above. FEA proposes to find that this uncommitted coal exists in amounts sufficient in any year to meet the estimated additional demand for coal, both nationally and from these Districts, resulting from this NOI, from all other Notices of Intention to issue Prohibition Orders to date and from all outstanding Prohibition Orders issued to date under authority of Section 2(a) of ESECA.

Coal for Cromby 2 will probably be bought from producers according to regional supply/demand relationships related to the powerplant's location from Bureau of Mines Districts 1 through 15. FEA observes, however, that this powerplant could purchase coal in other markets as such production becomes available. (The Feasibility of Considering Expanded Use of Western Coal by Midwestern and Eastern Utilities in the Period 1978 and Beyond, School of Engineering, University of Pennsylvania, November 7, 1975.)

B. *Coal transportation.*—1. *Location of powerplant and coal supply.* Based on an FEA Study, Utility Analysis of Coal Transportation Availability, November 1976, (hereafter "Transportation Availability Study"), coal for Cromby 2 would probably come from Bureau of Mines (BOM) District 1 as the primary source of supply and from District 8 as the alternate source of supply. While these supply areas are the nearest available sources able to supply complying coal to the powerplant, complying coal can be transferred by rail from other identified sources within the United States. The analysis of transportation availability is based on the most likely route as well as two alternate routes. These routes were chosen to demonstrate transportation availability.

2. *Route of coal shipment.* A primary route for coal delivery for Cromby 2 would originate on Consolidated Railroad Corporation (Conrail), and be delivered to the plant via Coalport, Harrisburg, and Lancaster, Pennsylvania. The total rail distance is approximately 300 miles.

One alternate route from BOM District 1 would involve originating and delivering coal by Conrail, via Keating, Williamsport, and Reading, Pennsylvania.

Another alternate route from an alternate supply would be to originate coal from BOM District 8 to Hagerstown, Maryland, on the Norfolk and Western (N&W) Railroad. Conrail would deliver the coal from Hagerstown, Maryland to the powerplant.

3. *Originating trunk carrier.* Conrail, the expected originating carrier of coal from Cromby 2, has approximately 52,000 hopper cars with an estimated average capacity of 80 tons. Using an average number of deliveries of 10 per year per 80-ton car, Conrail may need as many as 550 additional cars to handle the increased demand from Cromby 2. This estimate assumes that the railroad would neither have excess originating capacity nor obtain cars from other carriers in the originating vicinity.

Conrail indicated that it is willing to acquire any needed capacity involved in shipment to Cromby 2 and that it would modify its expansion plans with demand conditions. The railroad also indicated that its carrying capacity could be expanded as quickly as the utility prepares to burn coal.

FEA's "Transportation Availability Study" concluded that for all potential Prohibition Order candidates studied, there would be no major constraints in transporting coal. The study examined existing rail transportation car capacity, water transportation capacity, including unloading docks, where applicable, and took into account projections made by all carriers to meet the anticipated demand for all types of transportation facilities assuming all powerplants studied were to receive orders under section 2(a) of ESECA.

Conrail indicated that transportation facilities at those mine sites within BOM District 1, served by Conrail are in satisfactory operating condition and that loading facilities could handle the required coal volumes.

FEA has not found nor has it been informed of any apparent constraints to carrying coal for any alternate of intermediate carriers should they be used.

4. *Destination carrier and powerplant facilities.* The primary and alternate destination carrier for Cromby 2 is Conrail. Conrail jurisdiction includes spur tracks to the plant, which are reported by the utility to be in good condition. Car dumpers are in place and operable for unloading coal.

Philadelphia Electric has indicated that all coal receiving facilities serving Cromby 2 are adequate to handle the projected demand through 1985.

There are no other obstacles to the delivery of coal to Cromby 2.

5. *Conclusion.* Coal transportation facilities will be available for the period a Prohibition Order is expected to be in effect since no major constraints to coal delivery over the primary route to the Cromby 2 presently exist, and alternate routes are available.

IV. *The prohibition of the burning of natural gas or petroleum products as its primary energy source will not impair the reliability of service in the area served by the affected powerplant.* Based on an analysis of the information submitted to FEA by the Federal Power Commission, and after consultation with the Federal Power Commission, FEA proposes to find that the issuance of a Prohibition Order to Cromby 2 will not impair the reliability of service in the area served by the powerplant. This proposed finding is based on the facts and interpretations stated below:

A. *Description of the dispatching system.* 1. The Cromby Station is owned by Philadelphia Electric, which is a member of the Pennsylvania/New Jersey/Maryland (PJM) power pool, which is within the geographical area of the Mid-Atlantic Area Council regional electric reliability council.

2. The term "dispatching system" as used in the proposed finding means the PJM.

3. The gross capacity, as of September 1976, of all dispatching system powerplants was 44,543 MW. (See line 7, attachment 1)

4. Proposed changes up to the period in which Philadelphia Electric would implement a Prohibition Order will result in the gross capacity indicated on line 3 of attachment 1 because of the following changes in the dispatching system listed in Table 1:

TABLE 1

Powerplant designation	Fuel	Type of change	Capacity change (megawatt)	Effective date
Salem 1	Nuclear	Add	+1,090	December 1976.
Martin Creek 4	Oil	Add	+850	January 1977.
Calvert Cliffs 2	Nuclear	Add	+900	March 1977.
Crawford 3	Coal	Retired	−42	Do.
Crawford 4	do	do	−5	Do.
Gould St. 1	Oil	do	−33	April 1977.
Gould St. 2	Oil	do	−33	Do.
Easton 21	Oil	Add	+6.25	May 1977.
Easton 22	Oil	Add	+6.25	Do.
Easton 3	Oil	Retired	−.7	Do.
Gilbert 8	Oil	Add	+130	Do.
Homer City 3	Coal	Add	+692	October 1977.
Three Mile Island 2	Nuclear	Add	+927	May 1978.
Crawford 1	Oil	Retired	−33	June 1978.
Crawford 2	Oil	do	−33	Do.
Salem 2	Nuclear	Add	+1,115	May 1979.
Indian River 4	Coal	Add	+445.5	Do.
Brandon Shores 1	Oil	Add	+610	February 1980.
Chalk Point 4	Oil	Add	+601	May 1980.
Susquehanna 1	Nuclear	Add	+1,050	November 1980.
Easton 4	Oil	Retired	−.7	May 1981.
Westport 1	Oil	do	−25	January 1982.
Westport 13	Oil	do	−20	Do.
Westport 14	Oil	do	−20	Do.
Brandon Shores 2	Oil	Add	+610	February 1982.

Totals; 1982 Spring load period:

Added	+9034
Retired	−245
Net change	+8789

NOTE.—See line 2 attachment 1.

5. The proposed changes in Table 1, above, are based on the best information available to FEA and the Federal Power Commission (FPC Form 12E-2 dated October 29, 1976) at the time this NOI is issued. FEA has taken into consideration the possibility that the proposed changes may not be completed by the indicated date, but has determined that in such event, with minor modifications to the projected schedule of changes contained in Table 1, gross capacity in the dispatching system would not be significantly affected during the period required for conversion of Cromby 2. FEA assumes outages for conversion at those times that are optimally suited, in terms of forecast peak load periods, to maintain reliability of service.

B. *Forecast peak loads for the dispatching system.* 1. A forecasts of peak the load for the dispatching system during the period in which Cromby 2 would implement a Prohibition Order is as indicated on line 8 of attachment 1.

2. The forecast peak load has been compared with the load peak in a previous similar period. The annual peak load growth rate for these forecasts is 5 percent.

C. *Maximum projected outages for the dispatching system.* 1. Scheduled outages for normal maintenance, including other powerplants implementing Prohibition Orders and nuclear plant refueling within the dispatching system during the period in which Cromby 2 may be implementing a Prohibition Order, may result in some loss of capacity which is expected to be as indicated on line 4 of attachment 1.

2. A projected outage of 2 months is estimated to be required for the powerplant to make modifications, installations, or other physical adjustments required by a Prohibition Order should it become effective. The powerplant may be less than fully dependable during the period of on-line testing and adjustment following such modifications. This period is not expected to exceed 30 days. To take advantage of the maximum reserve capacity, the projected outage is most likely to occur during 1982. The potential loss of capacity from an outage of Cromby 2 would be approximately 220 MW, (line 7, attachment 1) which is included in the total outages indicated on line 6 of attachment 1. The assumed conversion period specified on attachment 1 is shown for the purpose of illustration only.

3. Maximum projected outages within the dispatching system include normal scheduled maintenance for all powerplants (line 4 of attachment 1) and outages due to conversion (line 5 of attachment 1) for those powerplants to be implementing Prohibition Orders. Maximum projected outages are expected to be as indicated on line 6 of attachment 1, thereby reducing the gross capacity and resulting in a net dependable capacity for the dispatching system.

D. *Net dependable capacity for the dispatching system.* 1. Based on the foregoing information, the net dependable capacity for the dispatching system at the expected time of implementation of a Prohibition Order would be as indicated on line 9 of attachment 1.

2. Comparing the net dependable capacity to the forecast peak load shown on line 8 of attachment 1 indicates that the reserve capacity shown on line 10 of attachment 1 would exist for the dispatching system.

3. Comparison of this reserve capacity to the forecast peak load shown on line 8 of attachment 1 results in a reserve margin as indicated on line 11 of attachment 1 (as contrasted with a reserve margin as indicated on line 12 of attachment 1 if no units were removed from service due to Prohibition Orders).

4. The Federal Power Commission considers this to be an acceptable reserve margin taking into consideration the geographical location of Cromby 2.

5. At the completion of the conversion, there will be a net 5.4 MW derating of Cromby 2 as a result of using coal as its primary energy source.

6. Existing transmission system interconnections may transfer an additional 9,250 MW into the dispatching system. This ca-

pacity may provide an additional resource of electric power during the implementation period and will enhance the reliability of service.

E. *Conclusion*. If dispatching system conditions, including any scheduled outage by Cromby 2, are as presently forecast during the time required to implement a Prohibition Order by Cromby 2 there will be no impairment of reliability of service within the meaning of ESECA in the area served by Philadelphia Electric or in the dispatching system as a result of the Order.

ATTACHMENT 1

PJM RELIABILITY DATA CROMBY

ASSUMED CONVERSION PERIOD MARCH 1 TO JUNE 30, 1982

	Megawat capacity
1. Gross capacity of PJM as of September 1, 1976	44,543
2. Added capacity	8,789
3. Gross capacity	53,332
4. Scheduled outages for maintenance	10,132
5. Projected outages due to prohibition orders	468
6. Maximum projected outages, due to maintenance and prohibition orders (line 4 and line 5)	10,600
7. Unit outage	220
8. Peak load spring 1982	32,923
9. Net dependable capacity	42,732
10. Reserve capacity	9,809
11. Reserve margin percent (maintenance and prohibition orders)	29.79
12. Reserve margin percent (maintenance only)	31.22

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